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THE DENTAL DIGEST

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The Color Problem in Dentistry

By E. BRUCE CLARK, D.D.S., Uniontown, Pa.

INTRODUCTION

Almost every writer in the field of dental esthetics and dental ceramics makes mention of the many difficulties encountered in the reproduction of tooth color in dental porcelain. Nearly every technician in the ceramic laboratories feels that most of his troubles would end with the solution of the color problem. The following question naturally arises: What is responsible for this unsatisfactory state of affairs? The answer may be found in a survey of the educational and material equipment with which we attempt to meet the requirements of satisfactory color work. Let us first determine these requirements and then make a survey of our equipment.

The color problem in dentistry consists chiefly of making an analysis of the colors found in a natural tooth and the reproduction of those colors in silicate cements or fused porcelain or of the selection of an artificial tooth in which the colors have already been established. Any similar technical procedure requires, first, that we know something of the basic fundamentals of the problem with which we are dealing; second, that we have a standardized or, at least, a definite method of procedure; and, finally, that we have the necessary materials with which to accomplish the work. The requirements of our color problem in dentistry are in no wise exceptions to the rule, and they may be briefly stated as follows: (1) a knowledge of the fundamentals of color science; (2) a method for the visual analysis of tooth color and a system which provides for the specification of the color found, together with formulae for its reproduction in dental porcelain and cements; (3) pigments of sufficient color range to make possible the reproduction of all tooth-color specifications. With these three color requirements in mind, let us see how well we are equipped to meet them.

In the first place, the curriculum of our professional education did not provide for the teaching of the fundamentals of color science, hence we as a profession are not familiar with the procedure of visual color analysis, we are not familiar with the dimensions of color, and we are not fully aware of the fact that color dimensions can be measured numerically just the same as the length, width and depth of an object can be measured in feet and inches.

Not only does this lack of education handicap us in our ability to recognize

and describe a color, but it handicaps us in our efforts to recognize color defects and leaves us without a language for the description of the defect as compared with the correct color. In other words, we may recognize a color defect, but if we do not know the nature of the defect, how can we hope to remedy it, and if we cannot describe the defect, how can we tell an assistant or a technician how to remedy it? This situation does not, of course, apply to every dentist, but it applies to the profession in general, with the result that we find ourselves rather ill equipped to meet the first requirement of a color problem.

Being without the first requirement, it is difficult for us to realize the importance of the second requirement and the tremendous handicap the lack of it presents. In other words, since we have never had a system of color measurement and color specification, it is difficult for us to appreciate its practical value. We are inclined to believe that it is impossible to accomplish certain standards of perfection in color work, when in fact it becomes a very simple procedure if we are properly equipped to do it. This may be briefly illustrated by the following example:

If we were to construct a system that would arrange all the colors found in the natural teeth in units or steps that differ from one another in each of the three dimensions in just noticeable degrees, we should find that it would require approximately 800 units to cover the entire field of tooth color. Half of the units may be considered body (gingival third) colors, and the other half enamel (incisal third) colors. Each of the body colors may be found combined in the teeth with any one of 25 to 60 different enamel colors. Now, if we were to go farther and construct a shade guide similar to the commercial shade guides, in which each tooth is made up of a body and an enamel color, we should find that the number of teeth necessary to cover the field of tooth color would run into the thousands. The construction of a shade guide of this kind would be not only impracticable but commercially impossible. However, it illustrates the inadequacy of the commercial shade guides which now form the basis of our present-day method of "taking the shade."

The actual equipment necessary to meet this very important requirement in our color problem is a simple method for the measurement and specification of the colors found in the teeth that we are required to match. The equipment necessary for the measurement should be a part of a color system which provides for the specification of all the 800 colors found in tooth color. It should further provide formulæ for the reproduction of these 800 colors in ceramic porcelain, or whatever material we are required to use, together with a definite technic for the application of the colors to the crown of the tooth to produce the desired blend between body and enamel colors.

The third requirement is not so difficult to meet. It is that we have pigments of sufficient color range to cover the entire field of tooth color. Sufficient pigments are available to meet this requirement in all materials except high-fusing porcelain. The high heat to which the pigments must necessarily be subjected limits the number that can

be used in high-fusing porcelain as compared to the many that may be used in cements and low-fusing materials. Fortunately, in recent years new methods of preparing and applying these pigments have been developed which give them a much wider range of color production than was ever before approached. This present-day color range is almost sufficient to meet the entire requirements of tooth color and altogether sufficient to meet the practical demands. Since these new colors have been used in part in the manufacture of artificial teeth, it is reasonable to assume that they will be made available in ceramic porcelain. This disposes of the third requirement, but leaves the first and second without solution.

It is therefore the purpose of this series of articles to present a simple account of the fundamentals of color science, together with a description and illustration of the type of color system necessary for the measurement and complete specification of tooth color. The fundamentals of color science are not at all difficult to understand and they are not so confusing as is generally believed, but it is difficult for the student to find them presented collectively, since any investigation of the subject extends into three distinctly different fields of inquiry, namely, physics, physiology and psychology. This series of articles will therefore summarize material collected from the three above-mentioned branches of science and attempt to present it in a more or less outline form.

We as dentists are chiefly interested in the psychological characteristics of color, since our results are so dependent upon our ability to make a correct visual analysis of the color found in a tooth. An analysis of this kind is a purely mental or psychological process known among color experts as *introspective analysis*. It measures color in terms of its three dimensions —hue, brilliance and saturation. When these dimensions are thoroughly understood, the process becomes almost as simple as the measurement of form in its three dimensions—length, width and depth. For example, if we were replacing a fractured incisor with a porcelain jacket and the finished crown were ½ mm. longer than the approximating tooth, we should recognize the error instantly because it would be an error in one of the dimensions of form with which we are familiar. Now, if that same crown were two perceptible steps weaker in saturation, would we recognize the color error as quickly as we did the error in form? And if we were able to recognize it as an error of saturation, would we be able to remedy it without changing the hue and brilliance of the color? When we are able to do these things, we shall have equipped ourselves sufficiently to meet the psychological phase of the first requirement of dentistry's color problem.

COLOR A SENSATION

Color is the general name for all visual sensations. Everything that we see has color. Unfortunately, the word *color* is often employed in common speech with a restricted meaning. When the use of the term refers only to those colors which exhibit the spectrum hues, such as red, orange, yellow,

green, blue, etc., thereby excluding all of the neutral grays, black and white, it is used incorrectly. The correct use of the term includes both species of color,* for it is just as legitimate to say that the color of a house is "white" or "gray" as it is to say that it is "yellow" or "green." Science has accepted this latter use of the term *color* and defined it as the name for all visual sensations.

Color is a sensation produced through the medium of the eye just the same as sound is a sensation produced through the medium of the ear. We do not ordinarily think of color as a sensation, for we are inclined to link it up with the study of physics in connection with light. In the physical sense light is radiant energy, and it is quite true that this energy is the stimulus which acts on the retina of the eye, thus producing color, but since light is a physical energy and color is a psychological sensation, they are vastly different in character.

The Dimensions of Color

All sensations have various qualities or attributes. A sound may be loud or soft; it may be of high or low pitch. A taste may be bitter or sweet or it may be salt or sour. In like manner a color may be red, yellow, green, etc., and it may be light or dark and strong or weak. These three attributes of color have definite names. The first is known as *hue,* the second as *brilliance,* the third as *saturation.* When these attributes are treated as quantities and specified numerically, they form the basis for the measurement of color. For this reason the three attributes of color have come to be known as the *dimensions* of color.

In the study of color not only is an intimate acquaintance with its three dimensions the first requisite that should be acquired, but it is, without a single exception, the most important. To be able to learn something about color, we must first be able to understand a description of it. To attempt to describe a color without making reference to its three dimensions would be just as impossible as to try to describe the shape of a box without referring to its length, width or depth.

The dimensions of color describe the quality of a color. Any one with normal vision can recognize these dimensions, but we do not ordinarily think of color as having three distinctly different qualities and therefore we have not taken the trouble to learn the terms necessary for their description. Since the dimensions of color are so essential to its description and measurement, a detailed explanation of each one considered separately will follow, after which we will attempt to think of them collectively by following the steps in the construction of a color solid which represents the entire field of color in hue, brilliance and saturation.

Hue

By passing a beam of light through a glass prism and reflecting it upon a white screen a band of color is formed which we call the *spectrum.* The spec-

* The two species of color are distinguished from each other by the terms *chromatic* and *achromatic.* The former term refers to colors which are in some manner related to the spectrum, and the latter to neutral grays, black and white, since these colors are void of any trace of spectrum hue.

trum is crudely illustrated by the diagram shown in Fig. 1. The great majority of colors found in nature are related in some manner to the spectrum; that is, they have characteristics which are similar to some portion of the spectrum. This characteristic, attribute or quality is considered the first dimension of color, and it is known as *hue*.

Fig. 1
A diagrammatic illustration of the visible portion of the solar spectrum.

Now, what are those dominant characteristics of the spectrum? If we examine it, we shall see that the first color on the extreme left produces the sensation of red, and if we allow the eye to travel to the right, this red is seen to take on more and more of a yellowish tinge until it passes through the orange and ultimately becomes a pure yellow. Continuing on to the right, the quality is seen to change constantly as it takes on a greenish tinge and finally becomes a pure green. In like manner the green takes on more and more blue as it passes through blue-green and finally becomes pure blue.

From this point in the spectrum the next sensation is not a new one, but instead the blue becomes increasingly reddish as it changes to blue-purple or violet, at which point the spectrum terminates. When these two terminal endings of the spectrum are united to form a continuous band or circle of color, a few additional hues are formed, since blue and red can be mixed to produce the purples and the red-purples; consequently the entire field of hue must be represented by a circle, as illustrated in Fig. 2-*a*. Note that the circle is divided into ten major divisions, and that each one of these divisions is subdivided into ten additional steps. The major divisions are designated by the letters *R, YR, Y, GY, G, BG, B, BP, P, RP,* which, of course, are the initials for red, yellow-red, yellow, etc., and the subdivisions are designated by numbers that range from one to ten. Now let us see of what value a hue scale of this type becomes in the description of a color. For example, we shall assume that we are asked to describe the color of a lemon. To do this we must first state the hue, and we already know that it is yellow, but when we look at the hue scale (Fig. 2-*a*), we find that there are ten different yellows, that 2Y is a much redder yellow than 8Y, and that 8Y more nearly matches the yellow of the lemon than the 2Y. However, after a more careful examination we discover that the hue of the lemon lies between 7Y and 8Y, and by still closer adjustment we find that it lies at exactly 7.58Y on the hue scale. (The equipment used for making this measurement, together with those of the other two dimensions, will be described later.)

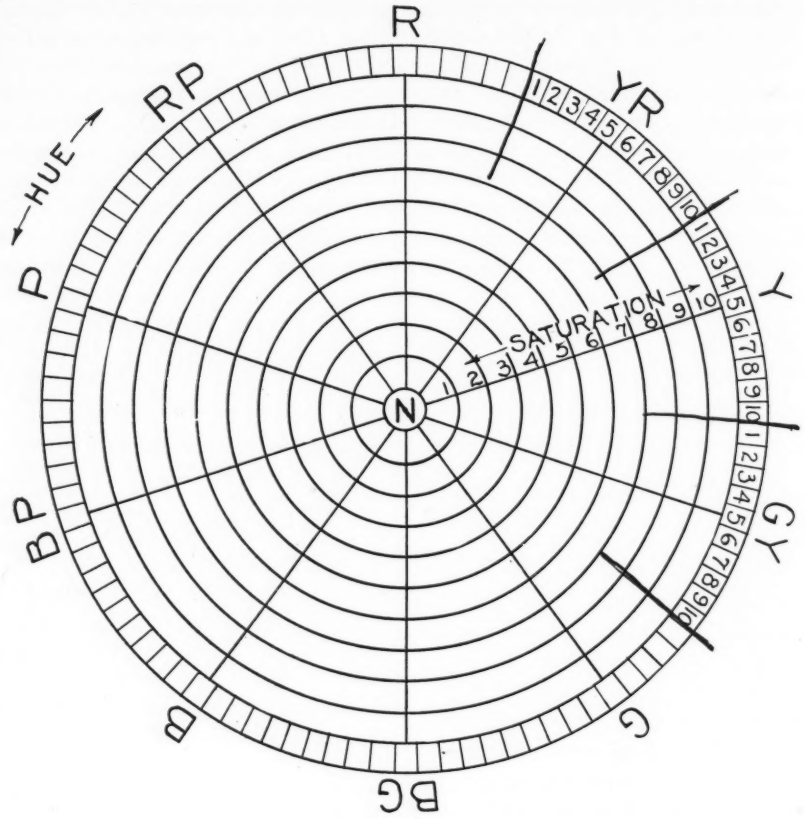

Fig. 2-*a*

Figs. 2-*a* and 2-*b* show the Munsell System of Color Notation in terms of both 10 and 100 divisions for each dimension. Each division in the brilliance and saturation scales can be subdivided into ten parts and written as tenths.

This example illustrates how definitely the hue of a color may be specified in terms of some standardized hue scale, and at the same time it shows how indefinite the following remark would be: "The hue of a lemon is yellow."

The terms *red, yellow, green, blue,* etc., therefore provide us with only a general idea of what the hue of a color may be. Terms such as *rose red, spectrum red, scarlet red, grenadine red, flame scarlet,* etc., provide us with a more definite idea of the hue in the event that we are familiar with the exact color that these terms represent, but all hues have not been given a name, and if they were named, it would be almost impossible to remember them, for it would require at least

150 terms to cover the entire field. For this reason it is much preferable to think of the hue scale in terms of the system described above, which requires that we be familiar with only ten terms, the remainder of the subdivisions being specified by the numerals from 1 to 10.

There are certain colors that do not have hue, and for that reason they are said to belong to the achromatic species of color. This group includes black, white and the neutral grays. All other colors have hue and belong to the chromatic species. It is not at all difficult to recognize hue in strong colors, but unless we have had some experience, it is slightly more difficult to recognize the correct hue of very light tints and the very dark shades. For example, the colors known as *pinks* have hues found in the red section of the spectrum, and the colors known as *browns* have hues in the red or yellow portion of the spectrum, but at just what location it is slightly difficult to determine unless we have some standard with which they can be compared.

If hue were the only quality or dimension of a color, it would be a very simple task to match colors. Unfortunately, a color cannot be described by simply stating its hue, for it may be a dark color or it may be a light color. This property of lightness and darkness is the second dimension of color. It is called *brilliance*.

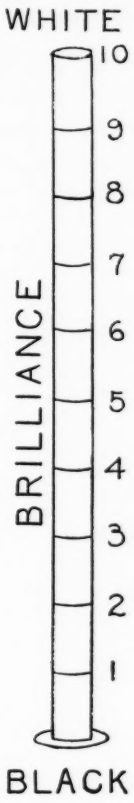

Fig. 2-*b*

BRILLIANCE

Every color in nature contains certain amounts of both black and white; the more white it contains the more brilliant it appears, and the more black it contains the less brilliant it appears. This property of whiteness and blackness, or lightness and darkness, is the dimension of color known as *brilliance*. We are all conscious of the difference between light and dark colors. Even those of us who are afflicted with certain types of color-blindness are able to distinguish between the property of lightness and darkness, so it becomes a simple matter for all of us to appreciate fully this dimension which, for want of a better term, has been called *brilliance*.

The use of the term *brilliance* in this respect is correct. However, it is slightly confusing, since common usage has given the term an additional meaning to that stated in the dictionaries and that used in color science. Common usage often misapplies the term *brilliance* to that property which constitutes the third dimension of color. For example, if we see a very strong red color in a room otherwise decorated in somber colors, we are in the habit of considering that red as a very brilliant color; in fact, we might consider it the most brilliant color in the room. This conception of the term *brilliant* is incorrect; any lighter color in the room would be more brilliant. The property which distinguishes the red from its surroundings is not brilliance, but instead it is its high degree of saturation as compared to the more somber, duller or less saturated colors near it. (*Saturation* is the third dimension of color and will be considered later.)

The brilliance of a color is measured on a brilliance scale just the same as hue is measured on a hue scale. The brilliance scale is a numerical scale, because there are so few terms that denote different degrees of brilliance. The scale is usually made up of 100 equal units starting at zero, which denotes a total absence of brilliance, and the color is absolute black.

The whole field of brilliance can be represented by a scale of neutral grays starting at absolute black and continuing through the dark grays to median gray and on through the light grays to absolute white. Black is always considered zero in brilliance, and white, being the most brilliant color, is usually placed at 10 or 100 (Fig. 2-*b*). (When the brilliance scale is divided into ten parts, each part is subdivided into ten steps, which are written as tenths.) As the scale ascends from zero, each gray unit becomes one step lighter, and the one lying at the half-way point, or 50, is called *median gray*. This type of scale is used as the basic scale for the measurement of the brilliance of any color regardless of its hue, because the achromatic colors, black, white and the neutral grays, have only the dimension of brilliance and for that reason they form a perfect scale. Every other color must be equal in brilliance to some one member in the series lying between black and white, since it is impossible for a green or any other chromatic color to be as light as white or as dark as black. This does not mean that it is necessary for us to compare a certain green to the series of grays when we wish to determine the brilliance of the green. Artists and color experts can make this comparison with almost uncanny accuracy, but the inexperienced person requires a color system that establishes brilliance scales in all of the basic hues, thus making the measurement a simple procedure. The brilliance measurement of any color refers to the scale of grays. For example, if a green color is said to have a brilliance of 75, we know that it is equal to the 75th unit on the gray scale, and, therefore, that it is a light green lying half-way between median gray and white, since the 75th unit lies half-way between median gray and white.

Artists call the dimension of brilliance *value,* but this term has no significant relation to the dimension itself. Other synonymous terms, such as

brightness, luminosity and *reflectivity,* are sometimes encountered, but their use should be avoided, since each of these terms has a definite application in the field of photometry, which has to do with the measurement of light.

If the dimensions of hue and brilliance were the only dimensions of color, the subject would still be very simple, but, unfortunately, there is a third dimension with which we are not so familiar. The third dimension of any system of measurement complicates matters, as the student learns in taking up the study of solid geometry after having successfully passed the course in plane geometry with little or no effort. The third dimension of color is not difficult to recognize and measure, provided we know just what it is, but if we are not familiar with it, we may confuse it with the other dimensions. Most of our mistakes in taking the shade of a tooth are made in this dimension.

SATURATION

It was stated above that every color in nature contains certain amounts of black and white. This fact will become more evident after we study the psychological primaries of color and the physical nature of light in its relation to the production of color, but for the present let us accept the statement without further explanation so that we can make use of the phenomenon in an imaginary experiment. If every color in nature contains black and white, it follows that every color must contain a certain amount of gray, since black mixed with white gives gray.

A great many people are unable to appreciate the third dimension of color because they have a misconception of the important part that gray takes in the field of color. A few dentists have the false impression that a color is always darkened when gray is added to it. This can be true only when the gray used is darker or lower in brilliance than the color to which it is mixed. If a lighter gray is used, the resultant color is lighter, and when a gray of the same brilliance is used, the brilliance of the resultant color remains the same. For example, let us assume that we have a vivid red paint having a brilliance of 55 and a neutral gray paint also having a brilliance of 55. Now let us place a quantity of the gray on an artist's palette and mix with it a small quantity of the red paint. What happens? We have produced a new color, which is still 55 in brilliance, but it differs from the original gray because it now has a hue which is red, but which is so faint that it can hardly be recognized. Let us add another small quantity of red to our new color so that we can more easily recognize the hue as red. The brilliance will still remain 55.

Now, by continuing this process of adding small quantities of red we find that the hue becomes more vivid or stronger with each new mix. We have not changed the brilliance at any time; it has remained at 55. We have not changed the hue at any time, for it has always been red. However, we have at each mix increased the strength of the hue in the color, and this strength of hue in a color is known as its *saturation.* Each time we added more red the saturation increased and the color became more saturated.

A color cannot be saturated with

gray or black or white. It must be saturated with some hue, and the stronger the hue appears in a color, the more saturated it is said to be. All the neutral grays, including black and white, are zero in saturation because they contain no hue.

To establish a saturation scale it is necessary that the units change with each step in only one dimension, that of saturation, as was seen in the experiment above with the red and gray paint. If we had used a darker red than brilliance 55, we should not have constructed a saturation scale because each unit would have changed not only in saturation but also in brilliance, and a mixed scale would have been established instead of a true saturation scale. Neutral gray is always zero in saturation, and the spectrum exhibits the hues in their maximum strength so that the saturation scale starts at neutral gray and ascends in equal steps as it approaches the spectrum (Fig. 2-*b*).

We have now covered the three dimensions of color: hue, brilliance and saturation. No single dimension is difficult to understand, but it is possible to confuse one with another when we are required to think of them collectively. Since most colors exhibit all three dimensions, it becomes necessary that we understand their relation to each other sufficiently well to avoid confusion. There are several diagrams of solids designed to illustrate the whole field of color in its three dimensions. If we follow the reconstruction of one of these solids step by step, the procedure will help us to think of color in terms of its dimensions, and it will also give us a better understanding of the relation between one dimension and another.

Fig. 3 is a diagram of the Titchner double pyramid which illustrates the entire field of color. In this diagram the dimension of brilliance is represented by the perpendicular dotted line extending from *B* to *W* (black to white). The field of hue is represented by the square lying in the horizontal

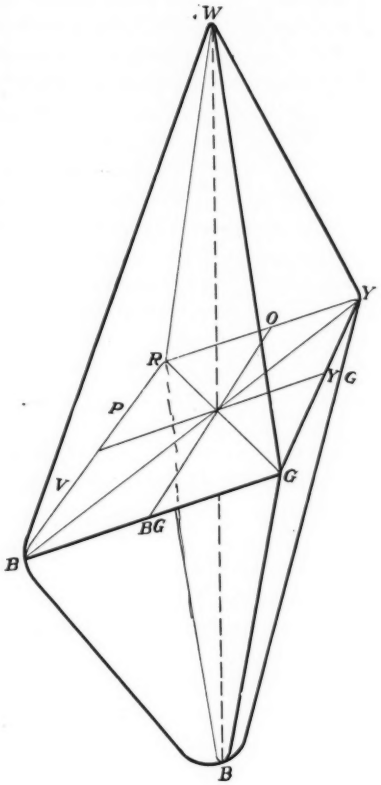

Fig. 3

The Titchner double pyramid, which represents the entire field of color arranged to form a color solid.

plane with the various hues designated by the letters *R, O, Y,* etc. This horizontal plane is located midway between *B* and *W* on the perpendicular representing brilliance and is therefore located at median gray, which means that each hue is of the same brilliance as median gray. Now, since the various hues are located at points farthest distant from median gray, they are of maximal saturation at these points, and the lines extending from each hue to median (neutral) gray represent different degrees of saturation. The peripheral lines extending from the hue letters to *W* represent tints* of the various hues; that is, the colors forming these lines are all lighter than median gray, and they continue to grow lighter as the vertex of the upper pyramid is approached. In like manner the lines extending from the hue circle to *B* represent shades* of the various hues that gradually grow darker as they approach black.

If this diagram is conceived to be a solid made of color which is distributed in the manner described above, a fairly accurate representation of the entire field of color is secured. Every variation of hue can then be seen on the peripheral border of the horizontal plane in its maximal degree of saturation. All the lighter tints of each hue can be seen on the surface of the solid as it approaches white, and all the shades can be seen as they approach black. If the solid were bisected from *W* to *B* through *R* and *G,* all the various degrees of saturation of the two hues, red and green, could be seen.

Tooth color does not occupy a very large segment in the color solid in respect to hue. The line from yellow to median gray forms one boundary, and an imaginary line from a point midway between yellow and orange forms the other hue boundary. The brilliance of tooth color occupies four of the ten steps between black and white, three of which lie above median gray and the other one below median gray. The saturation of tooth color reaches neutral gray throughout its entire brilliance extent. This range of tooth color will be definitely described in the second article of this series, together with practical methods for analyzing tooth color visually in terms of its three dimensions.

(To be continued)

* Tints and shades are colors that are respectively lighter and darker than median gray.

Some Flap Forms in Exodontia

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The lines of incision in the mucoperiosteum of the mouth are of primary importance in a consideration of good technic for a conservative delivery of a tooth root from its bony crypt. The reflection of the mucoperiosteum is done so that in carrying the forceps or lever blades over the bone which encases the tooth or root to be operated upon there may be no injury to the soft tissues. When soft tissues are torn, lacerated or removed from bone, there follows with more or less severity a train of distressing symptoms, such as pain from exposed bone (osteitis) and death and exfoliation of the tissues (necrosis and gangrene). Much postoperative discomfort may be spared the patient if a preparatory soft-tissue dissection from the bony area of the operation is made before exodontic procedures are commenced.

The periosteum must be spared. It is necessary for bone health as well as for mucous-membrane growth. If in carrying a tooth away from its alveolus the forceps take along some of the process with periosteal tissue, then the mucous membrane which was adherent to this periosteum will die. Similarly, if mucous membrane and periosteum are destroyed, leaving bone denuded, the bone will die. An appreciation of these facts is absolutely essential.

From my observation I feel that there is a hesitancy on the part of the general practitioner to resort to the making of a flap. Many seem to look upon this step as a radical procedure. In a sense it is radical. But it is a *radical* step toward a *conservative* result, and in this instance the end justifies the means, because we are not subjecting our patient to added discomfort or annoyance in making the flap. The practitioner who masters the technic of properly reflecting the mucoperiosteum has made significant progress toward competency in oral surgery. A good, clear field is one of the prime essentials for good bony surgery.

Recently I had occasion to give to a visiting dentist a practical demonstration to dispel all his doubts on the subject of flaps. The dentist had brought a patient to my office for the removal of an impacted cuspid in an edentulous area. The tooth was a comparatively simple one. The crown was just flush with the ridge, and the root pointed upward. The dentist asked me whether I might not be able to force my forceps beaks upward under the soft tissues and deliver the tooth by primary application and traction. I asked him, in turn, what objection he had to my making a flap. "I am desirous of having no delay to my restorative service for my patient." The patient was anesthetized and the soft tissues reflected labially. A prompt justification for my technic was clearly

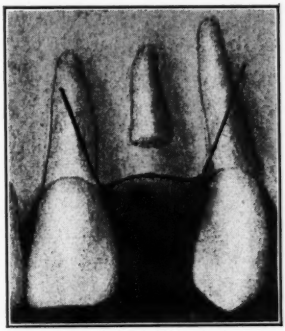

Fig. 1

Form of flap for the removal of a maxillary lateral incisor root.

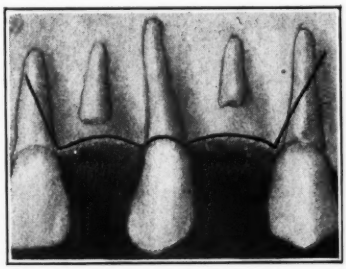

Fig. 2

Form of flap for the removal of a lateral incisor root and a first bicuspid root when the cuspid is in position.

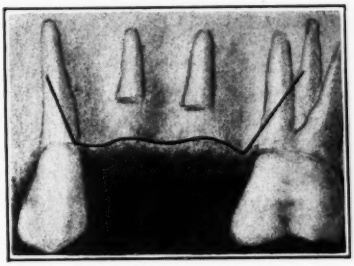

Fig. 3

Form of flap for the removal of both maxillary bicuspid roots.

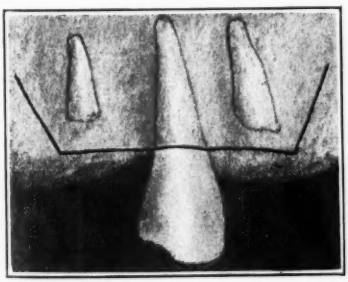

Fig. 4

Form of flap for the removal of a mandibular first bicuspid and first molar when the second bicuspid is in position.

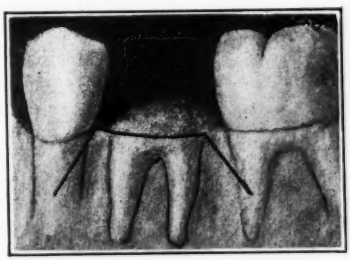

Fig. 5

Form of flap for the removal of a mandibular first molar.

portrayed to the dentist. Loosened fragments of process, mesially and distally to the impacted cuspid, greeted our eyes. These fragments of detached bone had been fractured away during his forceps application for the delivery of the lateral and the bicuspids before bringing the patient to my office for the cuspid. My reasons for the advisability of reflecting the mucoperiosteum rather than blindly forcing the beaks of the forceps upward under the mucoperiosteum were thus very convincingly brought to his attention.

I have frequently been asked by listeners at clinics I have presented showing my technic for root surgery, "Why can't this be done without the making of a flap?" My answer again is: These things *can* be done *without* flaps, but the essential difference between surgery with or without flaps is just the difference between a good, clean operation and a lacerated area. On the one hand we have flaps, and on the other we have "ribbons." Dental operators who make surgery their major or exclusive specialty do not hesitate to make soft-tissue dissections. The general practitioner would do well to emulate the practice, for in this lies the secret of good surgery.

In Fig. 1 are portrayed the lines of incision in the mucoperiosteum for reflecting a flap preparatory to operating upon a maxillary lateral incisor root. The blade is directed along the labial aspect of the ridge, through to the bone, and lateral angular incisions are made to join the horizontal one. The angular lateral incisions make possible a flap that gives a wide exposure of the field of operation and prevent the sagging inward of the flap when it is returned to place at the conclusion of the operation. There are times when the horizontal incisions may be made near the apical area, if it is only a small apex which is to be removed. The advantage here of not disturbing the ridge contour is to be considered, of course. This would be indicated in an operation for the removal of a root from an area which had been bridged over with a fixed restoration, and where it was desired not to disturb the bridge. But in most cases of the type shown in Fig. 1 I make the horizontal incision directly at the ridge for a complete labial exposure.

In Fig. 2 is portrayed the outline of a flap for the removal of a lateral incisor root and a first bicuspid root where the cuspid is in position. I favor a single flap for both roots rather than individual ones for the two roots. It simplifies the operation and permits proper trimming of the labial bone boundaries on either side of the cuspid.

Fig. 3 shows the flap form for an operation to remove both adjacent maxillary bicuspid roots. Here, also, I find it best to turn back a single flap rather than one for each root.

Fig. 4 portrays a flap form for an operation to remove a mandibular first bicuspid and first molar where the second bicuspid is standing between the roots. A single flap here permits careful attention to the standing bicuspid, so that its labial and gingival aspects may be thoroughly conserved.

Fig. 5 portrays a flap form for an operation to remove the roots of a permanent first molar in the mandible

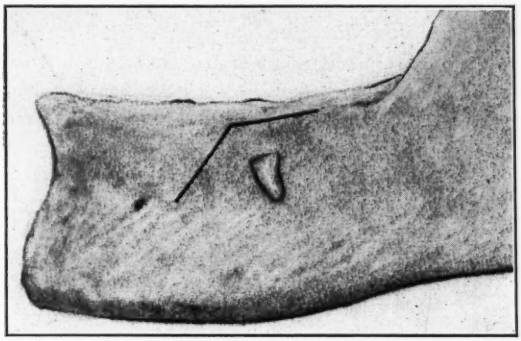

Fig. 6
Form of flap for the removal of a molar root in an edentulous mandible.

when the adjacent teeth are standing in the arch.

Fig. 6 portrays a flap form for an operation to remove a molar root from an edentulous area in the mandible. Only two incisions are needed, one horizontal and one angular incision mesially.

Fig. 7 portrays a flap form for a third molar in the mandible. Here it will be seen that the knife is carried around the gingival attachment of the third molar forward to the center of the second molar. It is important to give proper attention to the post-operative condition of the interproximal space between the third and second molars following an operation on the third molar. Unless the flap is turned back in such a form as to protect the mesial aspect of the third-molar alveolus, one may expect a painful post-operative period.

The return of the mucoperiosteal flap to its original points of attachment is a matter of some concern. Some operators prefer sutures for reattaching the tissues; others choose the vaseline gauze dressing matrix in the bone crypt. The most certain method would naturally be that of suturing. By this means one is assured of perfect union and bone protection. Exposure of

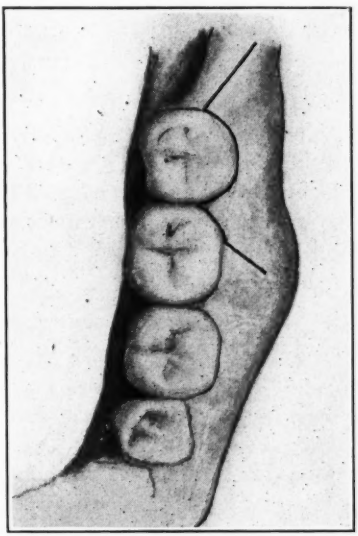

Fig. 7
Form of flap for the removal of a third molar.

alveolar tissue is sometimes invited by the vaselined gauze matrix technic. But the latter procedure has its place, and I frequently spare the nervous patient the fear that strikes him when the suture needle dangles before the eye. It is important to stress the necessity of seeing that no vaseline nor medicament, such as aristol or orthoform, is permitted to remain between the lines of flap incision to interfere with union of the coapted parts.

In conclusion I wish to urge again, as I have on a former occasion in a contribution to THE DENTAL DIGEST,* that, if possible, the operator obtain access to a dissection room for practical work on the cadaver.

730 Fifth Avenue

* THE DENTAL DIGEST, February, 1930.

RESOLUTIONS

By

THE AMERICAN SOCIETY OF ORTHODONTISTS

IN MEMORIAM

Whereas, The American Society of Orthodontists, whose origin was inspired by Dr. Angle, has adopted the following resolutions; be it therefore

Resolved, That the members of The American Society of Orthodontists express their deep personal sorrow and regret in his passing; and be it further

Resolved, That a page be set aside in the permanent records of this Society for the spreading, with tender memories, of this brief historical sketch of his life; and be it further

Resolved, That an engrossed copy of these resolutions be sent to his family; and be it further

Resolved, That copies of these resolutions be sent to the journals.

Some Essentials in Full Denture Technic

By F. M. HIGHT, D.D.S., Houston, Texas
(Literary Collaboration by GEORGE WOOD CLAPP, D.D.S.)

Second Article

ADVANTAGES AND REQUIREMENTS IN SURGICAL PREPARATION OF THE MOUTH

All patients today want comfort from their artificial dentures. They will not be satisfied with such denture service as was common a generation ago, and they will not go without teeth for from six to twelve months, waiting for resorption to prepare the mouths for dentures.

There are many patients for whom temporary dentures can be successfully made soon after the extraction of the teeth without any surgical preparation of the mouth, but in the vast majority of cases there is some characteristic of the ridge that makes this impossible. If such cases receive intelligent surgical attention, which is sometimes very slight in extent, satisfactory dentures can be made much sooner than would otherwise be possible.

When the desirability of cutting away some of the bone is suggested to patients, they are generally opposed to it, largely through lack of knowledge and because they fear the operation. Any dentist who wishes to do so can equip himself with models and illustrations that will enable him to show patients some of the conditions that make the early construction of comfortable dentures impossible. When intelligent patients understand the advantages to them of this operation, and that this preparation merely does promptly and properly what resorption may do slowly and improperly, they usually consent. If the dentist is to assume the responsibility of making the dentures comfortable, he should insist on surgical preparation of mouths when he believes it necessary.

Surgical preparation of the mouth effects an economy in money for the patient and in effort for the dentist, because when the mouth is properly prepared, the first dentures are very much more permanent in character than they can otherwise be. For many cases dentures made within two weeks after such preparation have proved satisfactory for years. For many cases where artificial dentures have been made soon after extraction without any surgical preparation of the mouth, the tissue changes have been so rapid and extensive as soon to render the dentures useless. Sometimes a succession of dentures also has been rendered useless in this way and the expense to the patient has been needlessly great, with more or less frequently repeated discomfort. If there has been good sur-

Fig. 1
Prognathous natural mandibular relation.

Fig. 2
The effect on the profile of the tooth relations shown in Fig. 1.

Fig. 3
Artificial dentures arranged with the mandibular incisors in normal relation to the maxillary incisors.

Fig. 4
The profile with artificial dentures in place.

gical preparation of the mouth and after a time the tissue changes necessitate remaking the dentures, it is often possible to rebase the mandibular denture and reset the maxillary denture at less expense than the cost of a new set of dentures.

The prognosis is better for a mouth that is intelligently prepared than for one where surgical preparation is not made. It is probably impossible to make dentures that are entirely free from what Gysi calls *side-thrust* as the result of slight improper contacts of the teeth in some movements or in unrecognized directions of thrust with food between the teeth. Side-thrust is beginning to be recognized as destructive to the tissues, a thing highly desirable to avoid. In carefully prepared mouths this side-thrust is less likely to occur or may be less in extent than in mouths where there is an unsatisfactory seat for the dentures, or where unsatisfactory arrangement of the teeth has been necessitated by lack of space or by some peculiarity of ridge form.

A pleasing appearance is becoming more and more necessary for social and commercial reasons. There are many cases where the appearance of the natural teeth has been unpleasing because of the ridge form rather than because of tooth form or color, and every once in a while some one has the natural teeth removed because of the unpleasing appearance, the necessary surgery of the mouth performed and artificial teeth made. If the work is well done, the appearance is greatly improved and the patient is pleased. People often tell stories of how social or commercial success which was rendered impossible by an unpleasing appearance is found within reach when the appearance is changed.

In general, it may be said that those cases in which surgical preparation must be extensive are those in which it is most urgently needed, because the success of the dentures is so greatly dependent upon a good basic form of the mouth.

THE PROSTHETIST'S REQUIREMENTS

It is not the purpose of this article to deal with the technic of the surgery involved in the preparation of the mouth. However, it is proper for the dentist to lay before the surgeon the principles of mouth form which are essential to the construction of satisfactory dentures. In other words, he should tell the surgeon what he needs in a mouth and allow the surgeon to get it by his own technic.

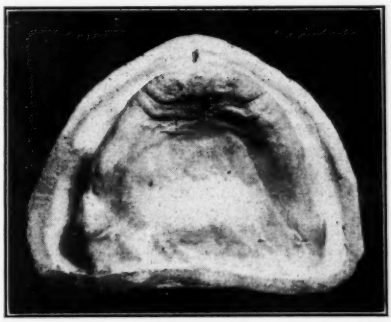

Fig. 5

Palatal view of favorable maxillary form. Slight undercut on labial wall, buccal walls nearly parallel.

A dentist should present to the surgeon three requirements, as follows: (1) that there shall be space for the

artificial teeth and the vulcanite which is to support them; (2) that there shall be good ridge form; (3) that the border tissues shall be properly placed. A short explanation of each of these requirements may be helpful.

Space in the front of the mouth is required for the sake of esthetics, that is, to permit an arrangement of the anterior teeth which is suitable for the case at hand. In some cases all that is necessary is to smooth the edges of

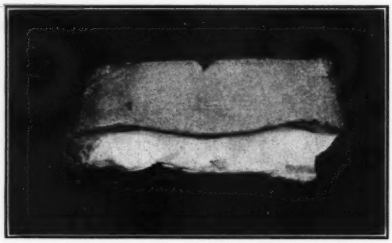

Fig. 6

Buccal view of favorable maxillary form, showing slight undercut on labial wall.

the alveoli. In others it is necessary to remove a great deal of the process. In a few cases the labial plate may be removed as far as the apices of the incisors and leave plenty of ridge to permit the construction of satisfactory dentures.

Space in the bicuspid and molar regions is needed for esthetic reasons and to provide room for an arrangement of the posterior teeth that will insure stability and efficiency in the dentures.

Ridge form relates to the removal of sharp points or edges that might cause discomfort and of any eminences or undercuts that will interfere with the adaptation of the dentures. This does not necessarily mean the elimination of all undercuts in the ridges, since some of these may prove to be of help

Fig. 7

Cross-section of a favorable form of ridge in molar region.

Fig. 8

Cross-section of a very unfavorable form of ridge in molar region.

rather than hindrances. For instance, an undercut above one tuberosity with none on the other side may be of advantage, whereas undercuts above both tuberosities may make satisfactory adaptation of the dentures impossible.

From the point of view of the one who is to construct the dentures the ideal form of the maxillary ridge (Figs. 5-6) would exist when the labial wall presents a slight undercut and the buccal walls are as nearly parallel to each other vertically as possible, since this will do much to prevent lateral shifting of the denture. The ideal form of the mandibular ridge, from labial or buccal to lingual, would be an inverted *U*, as in the ridge shown in Fig. 7. A high and thin mandibular ridge (Fig. 8) renders the construction of satisfactory dentures very difficult.

1323 Medical Arts Building

(*To be continued*)

The American Board of Orthodontia

The following orthodontists have met the requirements of The American Board of Orthodontia and have been issued certificates of qualification by the Board: E. B. Arnold, Houston, Tex.; E. Santley Butler, New York, N. Y.; Robert Dunn, San Francisco, Calif.; Joseph D. Eby, New York, N. Y.; Walter H. Ellis, Buffalo, N. Y.; Adelbert Fernald, Boston, Mass.; Henry C. Ferris, New York, N. Y.; D. Willard Flint, Pittsburgh, Pa.; George W. Grieve, Toronto, Ont.; Russell E. Irish, Pittsburgh, Pa.; Earl G. Jones, Columbus, Ohio; Harry C. Metz, Pittsburgh, Pa.; Stephen A. Moore, London, Ont.; John R. McCoy, Los Angeles, Calif.; H. C. Pollock, St. Louis, Mo.; Homer B. Robinson, Hutchinson, Kans.; Walter S. Sargeant, Toledo, Ohio; Paul G. Spencer, Waco, Tex.; Ralph Waldron, Newark, N. J.; Raymond L. Webster, Providence, R. I.; Percy Norman Williams, Tucson, Ariz.

OREN A. OLIVER, *Secretary*,
1101 Medical Arts Bldg.,
Nashville, Tenn.

The Equitable Service Distribution Plan*

By ALFRED J. ASGIS, Sc.B., M.A., D.D.S., F.A.S.S., New York, N. Y.

I

THE SOCIAL APPROACH TO THE ECONOMICS OF DENTAL CARE

What is ailing the dental profession economically? This is, in substance, the question that is uppermost in the minds of that portion of our leadership that looks ahead and thinks of the future. What are the economic ills of the dental practitioner? This, it may be said, is the problem that dental economists, both in and outside of dentistry, are trying to analyze and study in order to offer a workable and practical solution. But, undoubtedly, the most important of all these questions is the one that concerns us this evening.

Let us suppose that you and I are faced with immediate serious financial problems, such as being unable to meet the next month's rent, the payment of bills for the dental laboratory, the bills for dental supplies, etc., and the daily necessities of life. What can you and I do when our incomes are far below our expenses? What can be done for immediate relief?

An approach to dental economics—I use this expression for want of a better one—to be of any helpful value must be formulated not on the basis of arbitrary definitions, personal opinion or preconceived notions; it must cover every dental life as we find it, and not as we would wish it to be. If the first requisite, the protection and improvement of the economic status of the rank and file of dental practitioners, is not taken into consideration in our economic inquiry, we have failed to give the subject either content or form. We might say that such dental economics has neither a heart nor a soul. The ills of the dental profession may very well be likened to the ills of America. We may appropriately say of the dental situation what Samuel D. Schmaulhausen, in his recent book *Behold America,* has said in reply to the question: *What is wrong with America?*

"America is at the crossroads. . . . She (America) is trapped in a most disturbing dilemma. . . . Progress brazenly bragging of the miraculous new technology; poverty trekking the city's street in search of the right to sell apples. The classes cradled in comfort, caressing self-complacency, as of old; the masses in pain and deprivation, fingering misery as of old. And a deepening gulf between. . . . America is a social pyramid, topsy-turvy mad on its drunken apex. A land without leaders. A people without vision. Sheer chaos and corruption. Anarchy and lawlessness to boot."

What portrayal more befittingly suits the situation in American dentistry at the present time?

* Read before the Dental Health Association, New York, N. Y., March 26, 1931.

Let us glance through current dental literature on dental economics, and what do we find? There are as many views of what dental economics means, what its scope is and what it is all about, as there are writers on this subject. There is no unanimity of thought, no unity of approach, but a very evident variety and divergence of concepts. Official dental leadership says, if we take the following statement as its representative opinion:

"As members of the dental profession, we are privileged to serve mankind. To the extent that we succeed in serving, we may consider ourselves as succeeding in the profession. He who truly serves succeeds."*

In the same vein we are reminded of the *grave danger* to our professional status that our preoccupation with the economic problems is likely to be if, as C. N. Johnson says, "this phase of our professional life is magnified to the exclusion of the strictly professional and ethical interests of our occupation, and the moment this is done, it will start us on the straight road to commercialism and to deterioration as a profession."** What significance may we attach to these preachings in the light of the urgent and immediate economic problems with which the rank and file of practitioners are face to face? Let us set forth our question thus:

As students we have been told that the dentist's income averages about $8,000 or more per year. Some of us practitioners have come up to this mark in the past, others slightly below this quota. Our skill and dental experience have certainly increased with time. According to the technical teachings of the conventional dental economists our incomes should increase with time and experience. Our incomes seem to be declining. Our fees cannot be raised beyond a saturation point. Our patients simply will not permit it. In addition, patients are getting fewer in number. Our expenses have not been decreased but have risen. The cost of living is going up on the scale. As professional men we are compelled to live up to a standard. Here we face the dilemma: What shall we do? What can we do? More specifically, what can I do and what shall I do to make ends meet? If we continue in the future to get as close to a solution of our economic problem as we have come close to a solution of it in the past, there appears to be nothing left for us to do as self-respecting practitioners but to quit dentistry and take up another profession while there is still time. Are we prepared to do that? Some trades are so organized that they hold out the promise of a decent wage that will provide for our families as well as some form of protection in old age, so that we may not become a burden on society or dependent on relatives. How about those at the age of forty?

The two contrasting viewpoints of the dental situation—one attempting to hold on to something intangible, indefinable, while at the same time fearing to face reality; the other in search of a solution, a remedy, a concrete formula or a way out of a most disturbing situation — indicate that something must give way. It is appar-

* Banzhaf, Henry L., *Fundamental Economic Factors in Dentistry*, THE JOURNAL OF THE AMERICAN DENTAL ASSOCIATION, February, 1931.

** Johnson, C. N., *Certain Phases of Dental Economics*, THE JOURNAL OF THE AMERICAN DENTAL ASSOCIATION, September, 1930.

ent also that those not engaged in daily dental practice who are devoted to dental educational problems, dental teaching problems, scientific research and related professional activities have failed to grasp the seriousness of the situation confronting the 80,000 dental practitioners and, as a consequence, the public. It is unfortunate that present dental leadership has not seen fit to place the social approach above the ethical. Scientists and preachers of ethics in dentistry have not fully recognized that the extent of the *application* of discoveries in health promotion and disease prevention, in terms of actual service rendered to the masses of the population, determines the rate of social usefulness of a profession. The means that make the extension of such application possible automatically call forth social sanction and public approval on that activity. To that extent does that activity also become ethical. Professor Harry Elmer Barnes called attention to this at the recent meeting of the American Association for the Advancement of Science in Cleveland, where this idea was brought more clearly to focus. While the natural sciences have progressed, social engineering today is in about the same stage of development that natural science was in the days of Thales (600 B. C.).

The question before us may be stated: Is there any hope for a solution or is the situation hopeless? We say that there is more than hope; there is a possibility for solving this problem in a very simple and practical way. We can solve it in a manner that will bring us immediate relief and at the same time bring back to activity some of our fellow practitioners now in despair.

We offer the *Equitable Service Distribution* plan as a practical measure for the solution of the economic problems in dentistry. The plan is essentially one of *application.* Its success depends entirely upon the extent of its application. It considers the 80,000 dental practitioners as an organic part of society. As a social unit the dental profession is an integral part of society subject to the same influences of industrial and economic change as are all other groups. It is in the interest of society that all of its units should be accorded fair and equal consideration in periods of adjustments. Only as a functioning unit is the dental profession a valuable member of society, not otherwise. In this light we shall endeavor to present the underlying principles, the mere skeleton of our proposal. In our distribution we have utilized reliable and authentic data. The facts are meager indeed. Our interpretation of some of these data will naturally differ from the interpretations given by those not in the ranks of the profession.

Essentially, we believe in *dentistry for use* as contrasted with *dentistry for profit,* as apparent in the teachings of the "business principles" applied to dentistry by some dental economists. We stand equally opposed to the concepts of a *static society* and a *static profession.* The profession has evolved. Society is dynamic. Social values have changed, and so have health values as applied to dental services. Dentistry today is a necessity to which all classes of society are entitled, and which they

have a right to demand. Whenever and wherever there arises a conflict between the *rights* of society and the *interests* of a group in that society, whether these interests be expressed in terms of the ethical code, professional privileges or otherwise, society must be served first. On this broad base of social construction do we approach our analysis, study and solution of the economic problems of dental care for the masses.

509 Madison Avenue

(*To be continued*)

G. S. Junkerman, A.M., M.D., D.D.S.

1859-1931

G. S. Junkerman, Dean of The Cincinnati College of Dental Surgery, passed away at his home in Avondale, Cincinnati, Ohio, on May 22, 1931, after a lingering illness of eighteen months.

Dr. Junkerman was born on February 14, 1859, in Cincinnati and received his education in the Cincinnati schools, graduating from Woodward High School in 1879. He was graduated from the Ohio College of Dental Surgery in 1881, from Miami Medical College in 1895, and received his A.M. degree from Ohio University, Athens, Ohio, in 1905. In 1893 Dr. Junkerman founded The Cincinnati College of Dental Surgery.

He was a member of the Cincinnati Club, Cincinnati Automobile Club, Cincinnati Dental Society and Academy of Medicine.

Technician Versus Dentist

By LEONARD L. McEVOY, D.D.S., Winnetka, Ill.

A REBUTTAL

Comment aroused by the above-entitled article imposes the duty of further explanation of the original article and assurance as to the comparative rationality of the author.

The first of thse objections appeared in THE DENTAL REVIEW, a journal of prosthetics published by a Pittsburgh dental laboratory firm. Thomas C. Bonney, D.D.S., the editor, takes issue, and two of his paragraphs need explanation and discussion. He says:

"We believe the leaders in the laboratory field and leaders in the profession will, by common consent, eventually solve to the satisfaction of both groups any remaining points of controversy. . . ." In this paragraph in a prosthetic journal I am assured that there are points of difference that should be settled.

Here is another paragraph by Dr. Bonney: "So far as the use of sample cases for the purpose of selling certain kinds of dental service is concerned, we see nothing about it that should cause any undue excitement."

Naturally models have their place in "selling certain kinds of dental service," as Dr. Bonney states it. My statements on the matter did not in any way suggest dispensing with their use. But the way in which they are employed in many cases and their indiscriminate use are reprehensible. For example, take the set of models with which we are all familiar, the maxillary partial with members missing on each side of the arch and accompanied by three or more methods of replacing those teeth. The first is usually a badly constructed vulcanite denture covering the whole roof of the mouth and possibly with no clasp to hold the appliance in place, then the vulcanite strap or perhaps the gold palatal bar case, finished in one of the transparent materials, and finally the superpolished full gold case. Instructions with an outfit of this type usually follow the plan of presenting these in turn to the patient and giving him the denture which he feels his pocketbook can afford. The same plan is pursued with everything from full dentures to fillings.

This type of dental service, and the type at which my article was directed, is derelict. The dentist employing it places the burden of dental diagnosis where it cannot possibly belong—on the patient. The man in the chair is asked to dictate the amount of the area to be covered by our partial, the type of clasp to be used, and is requested to select the materials employed. Certainly a certain technic is indicated and one type of construction is more suited to the case than any other. To do less for the patient or to employ inferior methods is not professional. The dentist who employs the methods outlined and asks his patients to diagnose their own cases is

not professional. He is selling materials and technics perhaps. I repeat that we are encouraged by all the agencies in contact with us to do this very thing, to use these samples and sales jargon—to accept this, the easiest way out.

I. J. Dresch, of Toledo, Ohio, the proprietor of a dental laboratory, writes in the The Dental Digest for April, 1931, to agree with much that I said and likewise to take issue. I can conform to everything he has said in his *A Technician Replies*. He states:

"It is true, nevertheless, that in many cases the mechanic does everything but take the impression . . . and in desperation has at times been compelled to take it himself. *It is only natural, then, that some mechanics wonder why they should furnish the brains and do the work as well as furnish the material, while the dentist takes the profit and the credit.* . . . But such a condition is the fault of the dentist himself and is a confession that many dentists are not serving the patient. . . .

"So far as full and partial dentures and removable bridgework are concerned, the average dentist does not practice dentistry."

Mr. Dresch admirably states the situation. My original article in no manner insinuated that all dentists were guilty of the practices outlined therein and as stated by Mr. Dresch. I think, too, that when the dentist takes radiographs, makes study models, determines bone support, carefully prepares the teeth and dictates the construction of the appliance, he is practicing dentistry in its highest form. Conversely, when he pursues the policy of sending impressions and bites to the laboratory without instructions, and when the mechanic constructs the case from beginning to end, the mechanic is doing the major portion of the dentistry. And in many cases, as Mr. Dresch has said, where the mechanic has been forced to take the impression himself, and where, as I have witnessed, the dentist takes his patient down to the laboratory to find out why the appliance is unsatisfactory, the dentist does not practice dentistry at all.

Further, as Mr. Dresch states, the average dentist does do most of these things. I am assured that three-fourths of the practitioners follow too many of the methods outlined. Consequently the average practitioner does not practice dentistry as far as the prosthetic end of it is concerned.

In The Dental Digest for May, A. I. Tobin, D.D.S., of Brooklyn, N. Y., makes much the same error as did Mr. Dresch. After an introductory treatise on psychocosmology, in which he reflects on the continuity of my cerebration, he goes on to assume that my article was aimed at the profession *en masse*. If it were my desire to give such an impression, and if, as I was assured by Mr. Dresch, I threw pride and prejudice to the winds, then most assuredly the article would never have appeared in a dental journal.

In my second paragraph I state:

"Some dentists send all their work out and some send none, with all stages intervening. . . . Of this a small part, say one-third, carries instructions as to the course to pursue, leaving one-half of all prosthetic restorations to the laboratory worker."

Obviously, any one who does not send work to the laboratory is not included in the article. Likewise the man

who dictates the construction of his appliance is not included, as, for example, a dentist employing the high-grade tactics of Dr. Tobin would not be affected by anything said therein. But, I repeat, the article does involve the average practitioner, and, again, if the services of the laboratory were removed, he would be lost. Where work is sent out and completed by the technician without instructions or advice from the dentist and is returned completed for better or for worse, the laboratory is doing the dentistry, furnishing the brains, work and material, and getting a part of the profit and none of the credit. Even one as sanguine as Dr. Tobin will admit this to be a most unjust practice.

In the ninth paragraph I open with:

"I know of no practitioner who openly discusses the relationship of the laboratory to himself, who tells any one that nearly all of his prosthetic work, from porcelain jacket crowns to cast gold dentures, is constructed out of his sight and *without his advice.*"

Again, obviously, if the practitioner does accompany his impressions with definite instructions, if he takes radiographs, makes study models, if he tells the patient what he should have and the way it should be done—this, above all!—then the doctor is practicing dentistry. If he does none of these things, if he sends the usual poor impressions without instructions or advice, or, further, if the laboratory sends out some one to take impressions for him, and, even further, as I have seen, if the dentist takes the patient to the technician for post-installation inspection to determine possible causes of failure, then he is practicing deception in every sense of the word.

If dentistry continues as at present, where the majority of men are not practicing dentistry as far as prosthetic dentistry is concerned, then we are perpetrating a hardship. The dentist is serving as a clearing house for the technician. Personally I believe that the course of events will be substantially as outlined in my original article, that technicians will work directly for the public, and I cannot see why they do not obtain legislation enabling them to do so.

For fear that the last statement be taken to mean that I am in favor of such a step, I hasten to make the opposite impression. I should feel very badly over such an occurrence, but my sentiment in the matter will have very little influence on the course of events. If it is true that the average dentist does not practice dentistry as far as prosthetic dentistry is concerned, if with all his training he does not dictate the construction of his cases, then he is amiss in either his abilities or his obligations. Probably the only remedy for the situation is to have the dentist become familiar with what he is attempting to do and refrain from collecting a profit for something he does not do and does not earn. I am not sanguine enough to believe that this will occur. Many practitioners do not belong to the dental societies nor subscribe to the dental publications; they are not going to be affected by any writings on the subject. One of the most regrettable steps that could be taken would be the elimination of the private practitioner. At the present time there is tremendous

agitation for that very thing, and the major portion of the body of dentists is helping it along.

Prosthetic work as done at present is in the major degree unsatisfactory. Prosthetists have estimated that 75% of the work is unsatisfactory to either patient or practitioner. Much of this is due to the unwieldy two-departmental functioning of prosthesis. And personally I never could distinguish the relative difference between various steps in the construction of a denture, yet under present laws one step may be completed by a technician and the others require five or six years of college education.

Too, there is the matter of mechanics doing work in the mouth at present. How much of this is done is a matter for conjecture, but no one with any familiarity with the field will say that it is not done. Of course this is contrary to law, and the better class of laboratories do not countenance such tactics, but, as a test of how any laboratory man feels on the question, ask a few of them if they think they are capable of rendering as good a service as that given by the average dentist.

It is almost impossible to discuss dental economics today without bringing in Dr. Owre, of New York. I think his idea of the short-course worker borders on the bizarre. Fancy a man with nine months' digital training on the directing end of the revolving bur in your mouth. But the doctor's writings are interesting and to the point, and his efforts have shown how derelict the average practitioner is toward his duties. Dr. Owre's analysis of the dental field in an Indiana city of small size is interesting. There are eleven full-time and several part-time dentists located there, and just one gives x-ray service to his patients. This and other statements I found hard to understand, and I corresponded with the Chamber of Commerce in the said city. His statements were substantially true.

In his ardor to do his arguments justice Dr. Tobin terms himself typical of the average practitioner, but of course he is not. Procedure as outlined by him is used only by the better class of dentist. For example, the average denture is made by the method known as the *mush bite,* and the doctor's tactics are far from such procedures. In his effort to disprove my case Dr. Tobin draws the analogy of an architect who designs a building and the laborer who does the actual work. He argues that there is no reason why the laborer can design the building or is as important as the architect who directs the laborer's efforts. This reasoning he applies to the dentist and the technician, calling the dentist the architect who designs the mouth appliances and the mechanic the laborer who executes his orders, and he states that there is no reason why the technician should be the architect (dentist) when the dentist's training peculiarly adapts him to the work of direction and design. Dr. Tobin here misses the point that most of the work sent to the laboratory and ALL of the work which is the subject of *Technician Versus Dentist* rely for both architectural guidance and construction on the technician.

I should very much dislike to see the private practitioner supplanted or even interfered with in any way. I

would sacrifice efficiency, economy and even health up to a certain degree to maintain the independence of our individual practitioners. But, if the plans of the many factions who advocate socializing and panelizing dentistry are to be thwarted, it will be by dentists becoming alert to their problems and making more of an effort at fulfilling their obligations.

458 Winnetka Avenue

[FEES]

I am well aware that a discussion of fees might in itself occupy the entire time of this paper. This subject is intimately interwoven with practice. Every practitioner has his own method of arriving at what he considers proper fees. To fix a fee without a knowledge of the case is not fair to the patient, dentist or consultant. There should never be, as a rule, in my opinion, any agreement among practitioners regulating professional fees. The question of fees rests with each individual and is a matter between practitioner and patient. There should be no such thing as a standard fee for all patients. Persons should be made to pay a fee in accordance with the professional services rendered and their ability to pay. In the matter of professional services a fixed fee for all is obviously unjust. Gratuitous services for deserving patients constitute a privileged phase of every true professional man's practice. Moreover, geographic location, size of the community and tradition all play a part in determining fees. Professional service is not amenable to fixed standards, for we are not dealing in commodities which have a fixed value subject to the rules of trade and barter. To practice on such a basis is to commercialize the profession and lower its ethical standards.

—BEAR.

An Outline of Dental Pathology

By NATHANIEL FREEMAN, D.D.S., New York, N. Y.
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V

SPECIFIC INFLAMMATIONS (*Continued*)

TUBERCULOSIS

Tuberculosis is an infectious disease characterized by inflammatory and necrotic processes in the body and incited by the presence and growth of the bacillus tuberculosis. The most distinctive morphological feature of tuberculosis is the development under the influence of the tubercle bacillus of larger and smaller, gray or white or yellow, firm or friable masses of tissue called *tubercles*.

Tuberculosis is a very common disease, not only of man but also of many of the lower animals. Inasmuch as the victims of this disease are apt to throw off enormous numbers of the bacilli in the sputum and other excreta, the germ is widely dispersed in inhabited regions.

Portals of entry and distribution.

So far as concerns the lungs, in which tuberculosis is common, it has been assumed that infection is most frequently direct, the bacilli gaining access through the respiratory passages to the alveoli by direct inhalation. In infants entrance seems to be gained through the intestinal mucosa.

Sources of tubercle bacilli.

(1) Transmission of fully virulent, infectious material directly through the air in coughing and sneezing, indirectly through dried infectious sputum ground to dust and floating in the air.

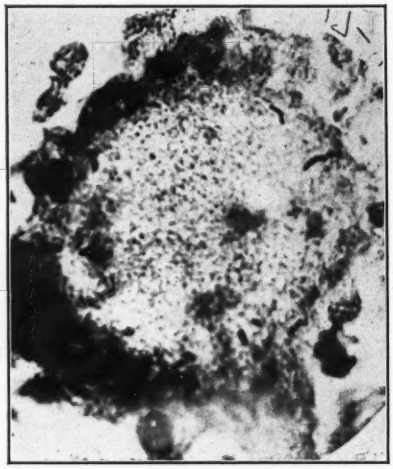
(2) Transmission of the germ through contaminated milk and the meat of tuberculous cattle.

Morphology of the lesions of tuberculosis.

In a great number of cases the local lesions induced by the tubercle bacillus are in the form of circumscribed nodules or masses of newly formed cells or tissue which are called *tubercles* or, if small, *miliary tubercles*. These tubercles are small nodules of irregular shapes, the smallest hardly visible to the naked eye. The smaller tubercles are gray and translucent; the larger are usually, especially in the central parts, opaque and white or yellow.

Microscopically the single minute tubercle consists of a typical arrangement, *i.e.*, in the center is found a more or less homogeneous area containing one or more giant cells. Outside this area is a zone of round cells. The center area has a tendency to break down and become necrotic and is of a soft, cheesy consistency called *caseation*.

A word may be said regarding giant cells and their formation. These giant cells are formed either by persistent nuclear division in growing



Tubercle bacilli in a giant cell.

protoplasmic masses which do not divide into separate cells or by the coalescence of the bodies of cells already formed.

Mouth manifestations.

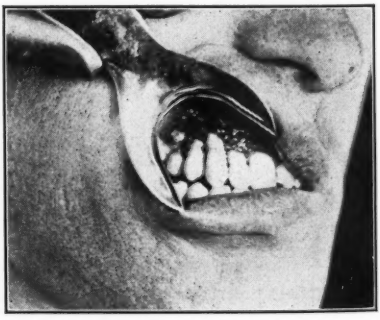
Tuberculous lesions of the mouth and contiguous tissues are comparatively rare, despite the presence of a pulmonary condition. The most frequent site is the tip of the tongue, usually directly opposite a carious tooth. The lesions or ulcers, when present, commence with the formation of miliary tubercles in the submucosa. These masses soon degenerate, soften and form ragged ulcers.

Lupus.

A lesion consisting of small multiple nodules of newly formed tissue in the cutis or mucosa or submucosa. Through the formation of new nodules and a more diffuse cellular infiltration of the tissue between them the lesion tends to spread and by the confluence of the infiltrated portions a dense and more or less extensive area of nodular infiltration may be formed. Considerable controversy still exists regarding its etiological aspect, many authorities considering it not to be of tuberculous origin.

Actinomycosis

Actinomycosis is a chronic infectious disease characterized by a slow, suppurative and proliferative process, often leading to the formation of large fungus masses, which may become calcareous. The excitant of the disease is the actinomyces or ray-fungus. The organism often grows in the tissues in the form of small, rounded masses, pinhead in size. They may be transparent or grayish white or yellow or dark in color. Under the microscope these masses often appear in the form of a dense group of radiating filaments with more or less bulbous ends, hence the common name *ray-fungus*. Evidently abrasions of the mucous membrane of the mouth by trauma, etc., allow the organism to get into the system.



Tuberculous ulcer of the gingival tissue.

The lesions occur usually in the jaws, floor of the mouth and throat. As a result of the infection there occurs a diffuse infiltration of the surrounding tissue, usually of the mandible. The jaw bone and the periosteum rapidly become involved and chronic productive bony growths or lumps are seen. Abscess formation with sinuses is common.

5 East 57th Street

(*To be continued*)

[PULPLESS TEETH]

The ruthless extraction of teeth should be condemned. If we must extract all pyorrhetic or pulpless teeth, dentistry has not progressed but retrogressed. Pulpless teeth that are properly sterilized and properly filled do not as a rule become infected.

To make a thorough dental diagnosis one should secure radiographs of all the teeth, and if there is any question of doubt as to a tooth, it should be radiographed from different angles. Before expressing an opinion as to the conditions found, one should examine the films in conjunction with the physical examination of the tooth in question, for I have seen many incorrect diagnoses rendered by commercial laboratories, although the radiographs were good. The fact that a root canal roentgenographically shows a complete filling does not mean that the canal is not infected, nor, when a canal is not completely filled, does it mean that it is infected. The roentgenograms do not always show pathologic conditions. I believe that the only way that a root canal can be tested as to its pathogenicity is bacteriologically through the cultural method. The radiographs merely assist the diagnosis and are by no means conclusive.

—GOLDBERG.

Dentistry Today

By ARTHUR G. SMITH, D.M.D., Peoria, Ill.

III

For every Fact there is always an adequate explanation.

In preceding Articles attention has been called to the obvious Fact that, up to the present moment, the vast majority of attempts to restore missing portions of natural tooth structure show a lamentable failure in actually accomplishing results at all adequate to the demands and requirements of the problem. For this well-nigh universal and highly regrettable state of affairs the "Adequate Explanation" is now briefly entered upon.

Most of us do not like to think!

We only like to THINK we think!

What we really do as a usual substitute for actual, analytical thinking is to mull over in our Minds the Ideas, Notions and Prejudices with which our particular Race and Social Position render us familiar, drift comfortably along in Companionship of others who "Think!" as we do, and then call this mild and limited exercise of our mental machinery "Constructive Thought."

What has all this to do with the Fact of Poor Dentistry?

A Very Great Deal!

We have all inherited from the Past and are now completely surrounded by a *wrong basic Idea* regarding the Teeth and their relationship to the problem of Personal Happiness and Well-Being!

Throughout all Legend and Literature the Individual who has lost an arm or a leg or an eye is called to our sympathetic attention as having been terribly unfortunate, while the Individual who has suffered a complete loss of the teeth is universally regarded as having been only mildly afflicted—something which would in all probability happen sooner or later as Life went on has happened only a little ahead of the usual schedule—that is all!

No one seems as yet to have made the very easy and obvious discovery that complete loss of the teeth is a definitely greater Personal Calamity than the loss of a leg or an eye. (Of course you will violently deny this statement as you read it! That is only your Mass Psychology inhibiting your Personal Thought!)

What does the loss of a Leg entail? Obviously, an Artificial Substitute of one sort or another. The best of these still leave the possessor practically unable to run or jump and very definitely handicapped in various sports or in walking long distances. All this is freely admitted, but the priceless faculties of Speech, Singing, Laughter and Voice Resonance are all absolutely untouched! Food in every variety and in every detail of its enjoyment is still the joy that it always was. How many of the Higher Satisfactions of Adult Civilized Life are contained in the ability to run or jump or walk long distances?

The loss of an eye impairs only two things in the entire field of Vision: first, the *size* of the field itself, and, second, the matter of "Perspective" or ability to estimate relative distances. (It is interesting to note in passing that possibly a majority of us, even when possessing normal vision, habitually close one eye when looking at certain fields of vision with the greatest care and attention!)

What does complete loss of the teeth mean?

(1) Irremedial changes in the bony structure of the face itself! (This change varies greatly in amount and in the Tragedy of its consequences with each Individual, but it always takes place and can never be completely overcome or remedied.)

(2) Speech and voice resonance are definitely impaired for all the remaining years of each Individual.

(3) The pleasures of eating are cut down to a fraction of what they were before the Natural Teeth were lost, and many articles of food must be practically banished from the Diet Lists of those wearing full dentures, and this without regard to personal preferences which may have existed before the teeth were lost.

In the light of Cold Logic and a reasonable evaluation of the several disabilities involved, there can be no escape from the conclusion that the person wearing a wooden leg or a glass eye loses definitely fewer of the worthwhile Joys of Life than the person wearing full upper and lower Dentures!

But, even so, what has all this to do with the Fact of Poor Dentistry and Inadequate Tooth Restorations? EVERYTHING!

The Patient confronted with the possibility of losing a leg reckons nothing of expense; the Old Homestead or the New Car will either or both be sacrificed, if necessary, to meet the heavy expenses considered as inescapable. Men of the very highest Professional standing will be consulted, no matter what their charges, in order to fend off the clearly visualized, stark calamity of a wooden leg or a glass eye.

Does any such series of reactions take place when the question of losing the Teeth is up for consideration? *It does not!*

With neither the Patient nor the Dentist is there, at the present time, any adequate reaction to the real gravity of the disabilities and losses inevitably connected with toothlessness! "Eventually, Why Not Now?" might well be adopted as the typical attitude of the typical Patient when the matter of losing the teeth is up for consideration. This utter lack of clear visualization of the true state of the Patient during all the remaining years of Life is the Ample Corner-Stone on which is borne the major part of the burden of responsibility for POOR DENTISTRY! For, if in the Soul of every Dentist there existed a vivid and poignant mental picture of the actual tragedies involved in Toothlessness, he would see to it by every means in his power that his viewpoint was in all cases imparted to his Patient, but, never having thought the matter out for himself on a logical basis and because of the further fact that the Patient is usually only mildly interested in the "stake" of Good Teeth, the average Dentist goes supinely along, agreeing with the paucity of

comprehension and lack of Ideals of his Patient, accepting these as his own standards and thus unconsciously reducing his conception of his responsibilities to the Patient's future years. Then, having closed his eyes to the real situation and having sung himself to sleep with the easy lullaby of "laissez faire," the next step is for him to do only easy and minimum restorations, for is not the whole matter at issue rather a minor one?

The utter Pity of such a course! Over and over again Dentists fail to really save teeth for Patients who could really afford to pay for their permanent saving, all because The Public and the vast majority of The Dental Profession are under the influence of an outworn attitude of Mind which is at complete variance with the actual facts involved, and which also largely disregards the better present-day remedies which are within the best abilities of almost every Operator and also well within the purchasing power of almost every Patient.

Poor Dentistry is therefore seen to be chiefly a matter of the Inadequate understanding of the consequences involved in loss of the teeth, of *Inadequate Motivating Impulses,* if you care for an imposing string of letters to describe the situation!

All of this state of affairs is given to us ready-made out of a Past which is entirely out of our reach and beyond our control. But let us not overlook the further very important Fact that this same Past, which has handed down to us so many strange and unworthy Ideas and Ideals, has also given to each of us a Brain which is much improved by vigorous use, and which many of us are failing to exercise sufficiently to insure adequate vitality and functional ability!

In this series let us go along for a while attempting some definite, honest, constructive THINKING AND ANALYSIS which will bear directly on some of the Major Problems whose solution will improve us as Individuals and perhaps—more important still!—enhance our Net Value as Servants in the matter of Public Health.

534 Jefferson Building

Common-Sense Psychology in Pedodontia

By BENJAMIN B. KAMRIN, B.S., D.D.S., Brooklyn, N. Y.

Children are at last entering into their own domain. No longer are they considered by the profession at large as an unavoidable and unmitigated evil. In the light of present investigations the child is in the center of the sphere of preventive dentistry, and, as such, it is best for obvious reasons that he be handled properly to obtain the greatest amount of cooperation.

It may be taken for granted that there is nothing that is as interesting as a small child. To gain his confidence is a feat that means mutual gratification; to harm him by word or deed is to leave an impression of terror that will be carried through life.

It requires no intense study into the mechanism of behaviorism to handle a child in an expedient manner. All that is required is tact, common sense and patience. Common sense can be easily acquired by saying the proper thing at the right time or doing a timely action in such a way as to redound to mutual benefit. Patience is indeed a beautiful word. In fact, there is no word in the English language that means so much to the dental practitioner. With it success is certain to come; without it failure awaits. Patience is almost the most essential factor in the proper practice of pedodontia.

THE CHILD'S FEAR

Remember that children like to be the center of attraction and also have a certain propensity toward friendliness. It is their fear of the unknown, accentuated by the mysterious manner or harsh tactics of the practitioner, that antagonizes the child and makes him resist dental treatment.

Place yourself in the position of a child on his first visit. He is fearful of the unknown, yet mindful of previous experiences. He is awed by the strange surroundings and walks forward with faltering step. Superficially the normal child attempts to be brave, yet it is a tremendous effort for him to relinquish the safe-guarding mother's hand and trust himself to the vast, uncharted and dragon-infested sea of reparative dentistry. Much of this fear can be eliminated by suitable pedodontia equipment or, in lieu of that, by the setting aside of a special afternoon for the practice of pedodontia. The latter method will permit many children to be present, thereby quieting the unspoken fears of the child by the feeling of companionship.

Upon the first visit of the child for the purpose of examination it would be best to confine one's attention to the mother and ignore the child completely. This permits him to look about and assure himself of the innocuousness of the surroundings. During the course of the conversation we will find the child surveying our person rather attentively. At this time we should pay attention to him. Gentleness and understanding will go a long way toward gaining his confidence. When once we

have attained that position, we must use the utmost care and discretion not to abuse or destroy it in any way.

The Unruly Child

The unruly child at the first visit presents an entirely different problem. These fractious children may be roughly classed in three groups, as follows:

(1) Those children who present with badly decayed and neglected teeth and are suffering pain, thus associating the dentist with the pain suffered. The method of treatment here is first to listen to the parent's tale of woe and then sympathize with the child and make him understand that you appreciate the acute suffering that he has undergone. Incidentally, admonishing the mother for her neglect will also materially win the child over to full confidence.

(2) Those unruly children who have been under the care of incompetent practitioners. Here we have a difficult psychological problem, for not only must we unteach and also remove all the resistance that they developed while under the care of the other practitioners, but we must also teach them to trust us fully. This will usually require from three to four visits, and it will be useless to attempt any work previous to that time.

(3) The home-spoiled and consequently mean and unreasoning child must be handled with the utmost tact. We must also instill into such children the idea that we will do everything possible for their benefit, but that they must respect us and have trust in our demands for cooperation. Therefore it would be best to ask the parents to remain outside. Handle the child firmly, yet kindly. As the first step in gaining his confidence, any necessary extractions should be done under general anesthesia.

In general, it may be said that force should never be used if we wish to keep the child as a future patient. Of course, in the instance of morons and imbeciles, the mental age of which is under three, force may be essential. M. Evangeline Jordan states that "under the age of three the attention may be diverted, but little can be done through reasoning. Over the age of three, to the mentally normal child, operations may be explained in a simple way and the attention held. When the age of five or six is reached, pride may be called upon as an aid."

Be Friendly

The practitioner should be the child's friend. In playing this important rôle it would be wise to try to remember one's own childhood. For the continuance of confidence it is well not to show one's disapproval of any trifling incident that the child's behavior may incur. It is far better to say "Yes" and "Of course" than "No" and "Do not" in guiding the children's interests, activities and desires. Encouragement reacts far better for future trustfulness than many other means. It is wise and beneficial to be at all times kind, considerate and courteous to the child, for confidence and kindness engender themselves.

The Child's Curiosity

Another factor that may be utilized in befriending the child is that the child is naturally full of curiosity,

therefore show the child the essential things in the operating room—the chair, the engine, the basin, instruments, etc. Let him raise and lower the chair, turn on the water and watch it swirl about in the basin, and convince him by touch that they are all perfectly harmless. Is there any better proof of this than that he can easily manipulate them? The few moments spent in this manner are priceless and will save a great deal of time later on.

Once the child is in the chair and has been imbued with sufficient confidence and trust, work may begin. If it is the first visit, and in the absence of emergency treatment, all that will be necessary is charting. In later visits make the work as brief as possible and, if necessary, increase the frequency of the visits. It is quite natural for even the best-behaved child to become peevish under too much restraint. Therefore, when a child shows restlessness, finish the urgent work as expeditiously as possible and dismiss him. Remember that it is easier to spend a few extra minutes at a future time in finishing the work than hours in pleading, cajoling and threatening the child all at once. A productive slogan is, "A short visit, but a pleasant one."

THE CHILD'S SPIRIT OF ACQUISITION

Another characteristic that may be cultivated with advantage is the spirit of acquisition. In the words of J. W. Maller, "Children love to collect. They are never as happy as when they are storing up what to them are treasures. Most children are reached by little gifts of toothpaste samples, booklets, wires, rubber bands, and things of like nature. Children often prize that which the adult considers trivial. . . . They love to be first in the practitioner's affections. This instinct can be utilized in making for personal achievement in keeping appointments, caring for appliances and necessary mouth hygiene. A child is pleased to be told how clean or neatly dressed he appears. Girls particularly are fond of display and value a compliment about the new dress or new piece of jewelry or new shoes."*

From personal observation I know of one practitioner who has a great deal of success in handling children during operative treatment by means of reward. At the beginning of the operation he places a bright new dime on the instrument tray. Pointing to the coin, he says, "Now, Charles, this brand-new dime is yours if you are a good boy." He claims that he has had about 100% success with this method. Naturally, many practitioners and psychologists are adverse to obtaining good behavior by reward. However, since results count, let each practitioner use his own counsel in this matter.

BE TACTFUL

The actions of the practitioner while operating should be well under control. During the first few visits each child watches every movement of the dentist. Children are highly suspicious and even confidence will not remove the thought that something will be put over if they are not on guard. Care must be exercised in speech. Nothing should be said referring to pain, break-

* *The International Journal of Orthodontia, Oral Surgery and Radiography,* June, 1929.

ing of bones, teeth, cutting tissue, etc., for invariably the meaning is misunderstood and apprehension and resistance to further treatment result.

Conclusion

The practice of pedodontia is both interesting and lucrative. Child patients are the best boasters and will aid a struggling adult practice to unprecedented heights. Boasting is the common trait of all children, and what is easier than for one child to tell another what a good dentist he has, for "he didn't hurt me a bit." Children at certain ages are unreasoning and may be led by their parents to the family dentist, but, like the balky horse, they may refuse to take treatment. If the child is satisfied by some new dentist, it will not take long before the entire family is using that practitioner's services.

[ARCH GROWTH]

So complicated is the complexity of the progress of growth and differentiation that, while the myriad resulting possibilities are known, one dares not hazard a prophecy as to the future size of any child's dental arch. But one thing is certain, and it is this, that the growth and differentiation processes produce an increased size of structures, morphologically. Whether the child's dental arch is going on through the stages of the deciduous dentition, or transcending from the deciduous to the permanent tooth stage, or proceeding along the permanent arch course of development, there is present at all times that ever accompanying propensity to increase in the size of the arch.

—Lancet.

Some Questions Pertaining to Dental Jurisprudence*

By HERMAN IVANHOE
School of Dental and Oral Surgery, Columbia University, '31

RIGHT OF UNLICENSED PERSON TO OWN AND OPERATE A DENTAL OFFICE

The right of a state to prescribe qualifications for those seeking to practice dentistry has been generally upheld by the courts. This is based on the broad theory that the actual work of dentistry requires peculiar knowledge and skill, and that the public is entitled to this protection from unqualified or incompetent persons who might seek to practice this profession if certain standards were not insisted upon. But when such acts have gone beyond this and have sought to enforce the same requirements upon one merely seeking to own or operate a dental office, they have not fared so well at the hands of the courts. This is on the grounds that the qualifications to practice do not apply to the mere right to own or operate an office.

In *State vs. Brown, 37 Washington, 635,* the Washington Legislature passed an act which, greatly abbreviated, provided as follows:

> Any person . . . seeking to practice dentistry in the State of Washington or to own, operate or cause to be operated, or to run or manage a dental office . . . shall file his or her name, together with an application for examination, with the secretary of the State Board of Dental Examiners, and undergo examination before that body. . . . Any person who . . . shall own, run, operate or cause to be operated, or manage a dental office . . . without having first filed for record . . . a certificate from said Board of Dental Examiners . . . shall be deemed guilty of misdemeanor. . . .

Brown, the defendant, was tried and convicted under this statute for owning and operating a dental office. From the judgment of the lower court he prosecuted an appeal to the Supreme Court of Washington. In stating the question before it for decision the court, among other things, said:

> The question is now presented as to the power of the legislature to enact a law requiring an examination by and license from the State Dental Board, as a prerequisite to "owning, running and managing a dental office or department." Appellant (Brown, the defendant) contends that this is an unwarranted infringement of a natural and constitutional right. Respondent (the State) maintains that it is justifiable as a legitimate exercise of the police power of the State. . . .

The court decided:

> It is solicitude for the physical well-being of the public, or that portion that may need dentistry work, which justifies that part of the statute providing for the examination and licensing of those who desire to "treat diseases or lesions of the human teeth or of jaws or correct malpositions thereof." To perform such work with safety and proper regard for health and comfort, the operator must possess technical knowledge and skill peculiar to the study and practice of dentistry.
>
> Can the same be said of one desiring to own, run, or manage a dental office? We think not. To own and manage property is a natural right, and one which may be restricted only for reasons of public policy, clearly discernible. To hold this portion of the statute valid would be to make possible conditions which were never designed to exist.

An interesting question arises as to the responsibility, should an action be brought, in the event of malpractice by a qualified and licensed dentist in the employ of an owner of a dental establishment who was not a licensed practitioner.

* Written for the course in the Theory and Practice of Dentistry.

In *Hannon vs. Siegel-Cooper Co., 167 N. Y. 244,* the court held that even though the Siegel-Cooper Co. had gone beyond its corporate powers in conducting a dental establishment, yet it could not escape liability for the acts of its servants in so doing.

The Right of the State to Impose Educational Qualifications Upon Those Wishing to Practice Dentistry

That a state has the right to prescribe reasonable qualifications for those seeking to practice dentistry within its borders is no longer an open question. And so long as statutes of this kind have not discriminated between persons seeking to engage in this profession, they have been declared valid and have been upheld by the courts.

It follows, then, that the principal question in perhaps the majority of these cases has been whether or not the statute being construed was discriminatory. And, in this connection, the right of a state to enforce its requirements upon the members of the profession from other states who have sought to practice within its borders has been a prolific source of litigation. It has been earnestly contended in a number of these cases that the enforcement of such requirements in one state, against duly licensed dentists of another, was in violation of constitutional rights.

But, by the great weight of authority, the courts have declined to uphold this contention and have held that a license to practice dentistry in one state gives no vested right to practice in another, and that each state has the right to exclude from the practice those who cannot or will not meet the requirements prescribed. The fact that the applicant is a licensed dentist of another state does not change the rule. The application of this rule is illustrated in an interesting manner in *People vs. Griswold, 213 N. Y. 92; 106 N. E., 929,* under the following circumstances:

Griswold was convicted of practicing dentistry without a license in the State of New York. He had, it appears, practiced dentistry in other states since 1881 and was licensed to practice in the States of Kansas and Utah. From his conviction in the lower court an appeal was taken in which, among other things, the section of the New York act which prescribed that applicants for examination for a dental license must have had a preliminary education equivalent to graduation from a four-year high-school course was attacked.

Griswold contended that the enforcement of this section closed the examination to him, regardless of his actual qualifications as a dentist and his many years of experience in other states, setting up that when he began the study and practice of dentistry, no such qualifications were demanded. He contended that the enforcement of this section precluded him from following a lawful calling and was unreasonable, arbitrary and discriminatory and in violation of rights guaranteed him under the state and federal constitutions.

In passing on this contention the New York Court of Appeals, after first concluding that the requirements of a preliminary education equivalent to a four-year high-school course was

neither arbitrary nor unreasonable, in part, said:

> It may seem hard that the defendant, who has practiced dentistry for many years in other states, cannot be licensed here or even permitted to take an examination to test his qualifications, until he first acquires the requisite preliminary and professional education; but it is difficult, if not impossible, to make a classification which will not in particular instances seem unjust. All in the same case as the defendant are treated alike. His fundamental error consists in the assumption that a license to practice dentistry in one state confers the like right in all other states, whereas such license is recognized, if at all, only on principles of comity. When the appellant (Griswold) came into this state, he fell into the class of those who had never been licensed unless the legislature saw fit to recognize the previous experience of those in the like case.
>
> We find nothing in the statute which can fairly be said to discriminate in any way against the citizens of other states. The privileges and immunities secured to citizens of each state in the several states by the federal constitution are the privileges and immunities enjoyed by the citizens in the latter states and are not the special privileges enjoyed by the citizens in their own states. . . . As a citizen of the United States, the defendant is not privileged to practice dentistry in this state without a license so to do. . . .

The defendant, Griswold, in the appeal also attacked the section of the New York statute as being discriminatory in which it was provided that duly licensed dentists in the state prior to August 1, 1895, should be deemed to be licensed to practice dentistry. In disposing of this objection the court said:

> The appellant has no grievance from the provision that those duly licensed and registered as dentists in this state prior to the first day of August, 1895, are deemed licensed to practice. It is the rule for such acts to preserve the status of those lawfully engaged in the pursuit regulated. As said in the United States Supreme Court: "The Fourteenth Amendment does not forbid statutes and statutory changes to have a beginning and thus to discriminate between the rights of an earlier and later time." (*Sperry & H. Co. vs. Rhodes, 220 U. S., 502; 55 L. ed. 561; 31 Sup. Ct. Rep., 490. . .. .*)

VALIDITY OF CONTRACT FORBIDDING DENTIST'S ASSISTANT FROM COMPETING WITH HIS EMPLOYER AFTER TERMINATION OF EMPLOYMENT

Contracts of this kind are as a general rule held valid, provided that the contract holds reasonable restrictions as to the vicinity and length of time therein that the assistant shall not conduct his own practice.

MALPRACTICE

Of the reported cases on malpractice against dentists quite a number have been predicated on injuries suffered through infections which developed after treatment. These cases are surprisingly similar in their facts. The aggrieved patient has usually been suffering from aching teeth or gums and, applying to the dentist, has had the teeth or possibly hidden roots extracted. Thereafter an infection of the disturbed region developed, which in many cases caused severe injuries.

Matuschka vs. Murphy et al., is a Wisconsin case reported in *180 N. W. 821* under the following facts:

The plaintiff, Matuschka, was suffering from toothache and called at the office of the defendant, Murphy, who was practicing dentistry in Milwaukee. Murphy was not in the office, it appears, but his employee, Stromberg, another dentist, was and the latter extracted the aching tooth for the plaintiff.

According to the report, Stromberg injected a 2% novocain solution before extracting the tooth for the purpose of deadening the peripheral nerves. The tooth was then divided and taken out

in two parts. A pus sac was attached to one root, but none to the other. The socket was not curetted, but it was washed out with boric acid and swabbed liberally with iodin.

This extraction was performed on Saturday, and on Monday the plaintiff returned to the defendant's office, as there was much swelling. Stromberg washed out the socket, painted it with iodin, instructed the plaintiff to keep it clean and to return that afternoon. In the afternoon the same procedure was followed. Tuesday morning the plaintiff called again and the swelling was still present. Stromberg washed out the socket with boric acid, painted it with iodin, and did the same thing on Tuesday afternoon. The plaintiff returned on Wednesday, and the condition of his jaw was such that Stromberg referred him to Dr. Wenker.

Dr. Wenker upon examination discovered a serious infection. He curetted the socket from which the tooth had been drawn, made incisions through the cheek and gums, put in packing, and thereafter removed seven teeth and a portion of the jaw bone.

Thereafter the instant action was brought against the dentist, Murphy, and his employee, Stromberg, for damages. This action was based on the theory that the injuries resulting from the infection were caused by the improper practice of Stromberg in extracting the tooth and in the after-treatment. The plaintiff, among other things, testified that Stromberg when extracting the tooth injected the needle into his lip and then without resterilization injected it into the gum. This was, however, denied by Stromberg.

The trial of the case, which was before a jury, resulted in a judgment in favor of the plaintiff for $10,000. Upon motion the court gave the plaintiff the option of taking $4,745 or a new trial. The plaintiff accepted the reduced judgment, and the defendants prosecuted an appeal to the Supreme Court of Wisconsin. Here, in reviewing the record and in announcing the rule relative to the burden of proof, which rested upon the plaintiff, it was, in part, said:

> While there is sufficient evidence in the record to sustain a finding that the defendant Stromberg did fail to exercise such reasonable care and skill as was ordinarily possessed and exercised by dentists in good standing, of the same system or school of practice at the time in question, we find a total absence of proof to support the further fact, essential to a recovery, namely, that such want of care and skill was the proximate cause of plaintiff's injuries.
>
> That plaintiff's painful experience and its lamentable results were due to an infection of the lower jaw is conceded. The question is, what caused the infection? In order to recover against the defendants, plaintiff must produce evidence from which the jury is justified in finding that it was due to the want of care and skill of the defendant Stromberg. This burden is not met by showing that it might have been the result of two or more causes, one of which was defendant's unskillful treatment. . . .

The court next directed its attention to a careful review of the expert testimony bearing on the probable cause of the plaintiff's infection. This evidence did not show with any degree of certainty that the methods followed by the defendant Stromberg were the proximate cause of the plaintiff's injuries. The court quoted from the testimony of one of the expert witnesses as follows:

> It is a fact that with an infectious process it is absolutely impossible for a surgeon or any one to foretell exactly how the infection will progress. The influence of the injection into the gums, as outlined, for the purpose of producing anesthesia, in my opinion did not have

any influence upon the progress of the disease. The number of bacteria that might be introduced by such a method of procedure as you have outlined, that is, the penetrating of the lip with the needle, compared with those that were already present, is so small that it would be purely speculative to say that they had any influence whatever in the progress.

The court then, addressing itself to the situation as a whole in the light of all the evidence, in announcing its conclusion said:

Plaintiff had a chronic infection of the lower jaw, of long standing, when he went to the defendant's office for treatment. It was impossible to foretell the future progress of that infection. The subsequent results could have followed from it without the pulling of the tooth and the subsequent treatment of the jaw according to the most exact scientific methods. They might also have followed from defendant Stromberg's negligent and improper practice and treatment. Which was the cause of the ultimate results cannot be told with any degree of certainty. While the experts differed as to the probability of the efficient cause, they conceded the possibility of any one of several causes. Where we have a result which may be attributed to one of two causes, it is not surprising that experts will differ as to the real cause. It emphasizes the fact, however, that any conclusion with reference thereto is mere conjecture and falls far short of that certainty which the law requires for the support of verdicts. Our conclusion is that the verdict of the jury, in so far as it finds that the want of care and skill on the part of Stromberg was the proximate cause of plaintiff's injuries, is unsupported by the evidence and cannot be sustained. . . .

The Supreme Court thereupon reversed the judgment rendered in the lower court, with instructions to enter a judgment dismissing the plaintiff's opinion, deciding that the plaintiff had failed to prove that the acts of the defendant had been the proximate cause of his injuries, which was essential if he were to recover.

Another case in point, *Angalo vs. Haller,* a recent Maryland case reported in *112 Atl. 179,* will serve. The facts greatly abbreviated, were as follows:

The plaintiff had a tooth extracted and the dentist failed to remove all the roots. Thereafter trouble developed and, after suffering for a month or more, she went to the office of another dentist, the defendant, and requested that the roots be extracted. This was on Sunday, and the defendant was not in his office, but an employee, Dr. Sandtler, was and he extracted the roots. He also advised the plaintiff, if she experienced any trouble, to return to the office for treatment.

When the plaintiff reached her home, her mouth was still bleeding. This continued until the afternoon, at which time her jaw began to swell and the pain grew worse. She did not, it seems, notify the defendant of this, but the next day called in her family physician, Dr. France.

Upon examination Dr. France discovered necrosis of the bone and, after treating her for several days, had her taken to a hospital. Here the plaintiff underwent two operations. Upon the first Dr. France testified, "Under general anesthetics I curetted the jaw and endeavored to relieve the condition through an opening and scraped all the necrotic or soft granular bone out." Upon the second operation two teeth were extracted and all the bone surrounding that which was involved was removed. The plaintiff was not troubled further and recovered.

Thereafter the instant suit for damages was filed against the defendant, Dr. Angalo, on the theory that the injuries suffered were caused by the negligence and unskillfulness of his employee, Dr. Sandtler. The trial in the lower court resulted in a judgment in favor of the plaintiff. The defendant appealed and the Court of Appeals, after first stating the rule as to the

duty of the defendant to exercise reasonable care, used the following language relative to the burden of proof to the contrary resting upon the plaintiff:

> But, while it is the duty of the professional man to exercise ordinary care and skill, a duty imposed upon him by law, it will be presumed, in the absence of proof to the contrary, that the operation or work done by him was carefully and skillfully done. And, because of such presumption, want of skill or negligence cannot be presumed, but must be affirmatively proved. Involved in the burden placed upon the plaintiff was the necessity of showing that the professional acts of the defendant which are alleged to have produced the injury complained of did in fact cause such injury.

The court then proceeded to examine the evidence of record as to its proving this, and in doing this and in announcing its conclusion it was, among other things, said:

> In this case there is little or no evidence showing that fact. The injury complained of was the condition of the jaw bone and its resulting consequences after the extraction of the tooth by Dr. Sandtler. The evidence is that, on the next day after the visit of the plaintiff to Dr. Angalo's office, Dr. France, the plaintiff's physician, found a necrotic condition of the jaw bone, which at that time had involved the muscles and gums surrounding the teeth, or, in other words, as he stated, he found the jaw bone rotting, and he treated it by curetting the bone and taking therefrom the rotten or decayed parts. Such an advanced necrotic condition of the jaw bone could hardly have been the result of anything that Dr. Sandtler did, or failed to do, on the previous day. . . .
>
> But, whatever may be said as to the question, whether the injury complained of resulted from the extraction of the tooth by Dr. Sandtler, there is absolutely no evidence showing that the injury complained of resulted from the want of skill or diligence of either Dr. Sandtler or the defendant in the extraction of the roots of the tooth or in their treatment of the plaintiff thereafter. . . .

In conclusion the Court of Appeals reversed the judgment rendered against the defendant in the lower court without a new trial, holding, in effect, that on the evidence of record the plaintiff had failed to show that she was entitled to damages. In other words, there had been an utter failure of proof of negligence or want of skill upon the part of the defendant dentist.

It is believed that the two foregoing cases fairly illustrate the reasoning of the weight of opinion in disposing of malpractice suits against dentists, based on injuries caused by infections which have developed after extractions or treatment, and their holdings may be summed up as follows:

It is the duty of the dentist to use ordinary care and skill in the performance of his work, and in the absence of proof to the contrary the law presumes such skill and care have been employed. It follows, then, that, in case an infection develops thereafter to the injury of the patient, the burden is upon him (the patient) to show negligence on the part of the dentist, and, further, that such negligence was the cause of the injuries resulting from the infection. And, as illustrated in the foregoing cases, if there is a failure to show these essentials, there can be no recovery that will likely be sustained by an appellate court.

Collecting for Dental Services Rendered to Minors

In performing dental work for a minor the dentist who is prudent will give some thought to his rights in the matter of enforcing payment for the services rendered, this assuming that the services are other than for cash and amount to a worth-while sum. And in this connection it may be stated broadly that the dentist may look to two sources for payment, i.e., either the

minor or his parents. But now comes the difficulty.

If it is sought to enforce payment from the minor, the burden is on the dentist to show that the services rendered were necessaries. This will usually be a question of fact, and whether or not services rendered were necessaries will depend upon the station in life of the minor and all the circumstances in the case.

In this connection, *Strong vs. Foote, 42 Conn. 203,* is of interest. The defendant was a minor, fifteen years of age, and the owner of an estate valued at $60,000. The plaintiff was a dentist and performed dental work for the defendant on one occasion to the value of $66.00. Later other dental services were rendered of the value of $4.00. The work was charged to the defendant, and the latter's guardian paid the bills without question.

About two years later the defendant, accompanied by friends, went to the plaintiff's office and had his teeth examined. They were found to be in bad condition. The plaintiff at the defendant's request proceeded to clean and fill them. This work was of the value of $93.00. The guardian declined to pay the bill, and the foregoing suit was filed by the plaintiff in an effort to collect.

Upon the trial of the case in the lower court the plaintiff was awarded a judgment. The defendant appealed, and in announcing the rule as to what constituted necessaries in relation to the needs of minors it was said:

> In suits against minors, instituted by persons who have rendered services or supplied articles to them, the term *necessaries* is not invariably used in its strictest sense, nor is it limited to that which is requisite to sustain life, but includes whatever is proper and suitable in the case of each individual, having reference to his circumstances and condition in life.

The court then directed its attention to the particular facts of the instant case, and in determining whether or not the services rendered amounted to necessaries it was said:

> The defendant applied to the plaintiff for relief from pain and the prevention of its recurrence; he, finding the cause in the defendant's decaying and neglected teeth, immediately began the work of relief and repair. . . . It was necessary for the preservation of the teeth, and the charge therefor is reasonable in amount. In view of the circumstances of this defendant, we have no hesitation in saying that the services are within the legal limitations of the word *necessaries*. . . .

On the question as to whether or not the plaintiff had acted with due care in performing the services without inquiry of, or notice to, the guardian the court, in part, said:

> Again, friends of the defendant . . . had twice previously taken him to the plaintiff for dental services, for which bills had been made out in his name and had been paid, his guardian furnishing the money without warning or objection to plaintiff. These acts on the part of the defendant and his guardian rendered it unnecessary that the plaintiff should have instituted an inquiry as to a guardianship over the defendant before performing these last services. . . .

The judgment in favor of the plaintiff dentist rendered in the lower court was thereupon affirmed.

On the other hand, if the dentist attempts to hold a parent liable for services rendered a minor, he must, generally speaking, show that the parent authorized the work and ratified same after completion, or that the services were necessary for the health or comfort of the minor, and that the parent negligently failed to have the work

done. This is obviously casting quite a burden upon the dentist, but unless he can bring his case within one or more of the foregoing requirements, he cannot hold the parent liable.

In *Stimpson vs. Hunter,* a Massachusetts case, reported in *125 N. E. 155, 7 A. L. R. 1067,* a minor son of the defendant, between seventeen and eighteen years of age, applied to the plaintiff for dental services. The plaintiff rendered the services and charged them to the son. It seems that the plaintiff at this time did not know the father's name, neither did he make any inquiry relative to the bill being paid by the father.

Thereafter the plaintiff sent a bill to the son. This was not answered and, after the father's name had been ascertained, a bill made to the son was sent to him. This was returned by the father (later the defendant) with the notation, "You won't get any money on this bill for quite some time yet," and signed by the father.

The bill was not paid and the plaintiff brought the foregoing action against the father. The trial in the lower court resulted in a judgment in favor of the plaintiff. The defendant prosecuted an appeal, and in passing upon the record the higher court, among other things, said:

> It did not appear that the defendant was apprised that the work was contemplated or knew of it while in progress; it was not performed on his credit; and there was no special exigency rendering the interference of a third party reasonable and proper. On the facts stated it could not be found properly that the defendant authorized the work. . . .
>
> The sending of the bill to the father was not notice that a claim had been or was then made against him. Therefore his answer was neither an admission of liability nor evidence of ratification. . . .

In conclusion the court sustained the defendant's exceptions, holding in effect that on the record the plaintiff was not entitled to recover, as he had not shown circumstances or facts that could be relied upon to charge the father with responsibility for the work done.

But here is another: *Ketchen vs. Marsland, 42 N. Y. S. 6.* The defendant's infant daughter was residing temporarily with a Mrs. Beecher. The child's teeth needed attention, and it appears that Mrs. Beecher took her to the office of the plaintiff, where the required dental services were rendered.

Thereafter the plaintiff sent a bill to the defendant and received no answer. Then from time to time, covering a period of about three years, the plaintiff continued to communicate with the defendant, but it seems that he was unable to get any response. The matter culminated in the filing of the foregoing suit.

The plaintiff was given a judgment in the lower court, and the defendant prosecuted an appeal to the higher court. Here, in passing upon the record, the court, in part, said:

> The plaintiff sent a bill to the defendant for these services and received no answer, in either approval or dissent; and during the ensuing three years, or more, up to the time of the commencement of this action several communications of his to the defendant, with regard to his claim, met with no better response. Was not a ratification to be inferred from such silence? Clearly, the answer must be in the affirmative.

The court next directed its attention to a review of the circumstances under which the services had been rendered in relation to charging the defendant. In this connection it was, among other things, said:

> Mrs. Beecher was not a mere intermeddler, without shadow of right to bind the defendant,

such as might have justified his ignoring a claim based upon her assumed agency in his behalf. She had been accorded the care and custody of his child, with certain implied duties to perform for the infant's well-being; and the procuring of certain necessaries, should circumstances require, was one of these duties. Granted that the services performed by the plaintiff were not such as the defendant became liable for, in the first instant, through the agent's act merely, yet this was because the agent, being authorized to contract for some services, was not authorized as to these. She exceeded her actual powers, while clothed with some, and but for the principal's subsequent assent, expressed or implied, he would not have been bound. Under the circumstances of the case the defendant's subsequent assent appeared from his failure to dissent during this extensive period succeeding his knowledge of the facts. He was bound to disavow Mrs. Beecher's act within a reasonable time after notice. . . .

The court concluded by affirming the judgment rendered for the plaintiff in the lower court, holding, as appears in the opinion, that the defendant's silence amounted to a ratification of his agent's acts that bound him.

COLLECTING FOR DENTAL SERVICES RENDERED TO MARRIED WOMEN

The question of the legal right of the dentist to enforce payment and the further question of just who is liable, as between the woman and her husband, are of considerable interest.

In *Clark vs. Tenneson, 146 Wis. 65,* the plaintiff was a duly licensed dentist engaged in the practice of his profession and was employed by the defendant, a married woman, to make a set of artificial teeth for her use. At the time this contract was entered into the plaintiff knew that the defendant was a married woman, and it seems that she had always previously paid him personally for dental work he had done for herself and her children.

Upon the completion of the work the plaintiff charged same to the account of the defendant. The defendant declined to pay, and the matter thereafter culminated in the instant suit, in which the plaintiff sought to collect, against her personally.

The defendant contested the action on the grounds that the claim represented necessaries that her husband was bound to supply, and therefore that he was liable and not she. In reply to this the plaintiff set up that it was understood from the beginning that the transaction was an individual and personal sale to the defendant, and that she assumed to pay for same. The case reached the Wisconsin Supreme Court on appeal, and in passing upon the question as to whether or not the teeth were "necessaries" it was, in part, said:

The only question in dispute is whether the defendant's husband is liable for these sets of artificial teeth as articles of such necessity that he, as husband, is obligated to pay for them. . . . It is a matter of common knowledge that artificial teeth are most useful and necessary articles for the promotion of personal comfort and health, and that their use in this country has attained practical universality. We consider that such teeth come within the class of articles constituting "necessaries," which a husband may be bound to furnish his wife. . . .

True, the plaintiff had no personal dealing with the defendant's husband. But this is not necessary, if the articles were purchased under circumstances indicating that they were supplied her in the usual manner, as necessaries for which a husband is liable as such. The question is, did the wife negotiate the purchase under circumstances indicating that she was authorized to do so?

It appears with sufficient certainty that the defendant attended to the dental affairs of herself and of other members of the family, including the payment of such bills. There is nothing in the record to show that she paid such bills out of her separate funds or estate. Presumably, then, she made the payments for the husband and father. This is sufficient to apprise the plaintiff of this fact, and he must be deemed to have dealt with her upon this basis, which showed her relation to the transaction. . . . Under the circumstances we consider that it was established that the defen-

dant was acting under the authority of her husband, and the court properly held that it was not shown that the defendant was individually liable upon the claim presented against her.

In conclusion the Supreme Court affirmed the judgment of the lower court in favor of the defendant, holding, as outlined in the opinion, that the plaintiff had failed to show that the contract entered into was one that would render the defendant personally liable.

And now we come to the consideration of when and under what circumstances the dentist will be entitled to hold a husband liable for dental services rendered to the wife. In this connection it may be stated broadly that a wife, merely by virtue of the marital relation, as a matter of law does not acquire the right to pledge her husband's credit. Before she may do this, agency, expressed or implied, must be shown.

As a general rule, for example, a husband will not be liable even for necessaries furnished his wife where she has left him without cause or where she has agreed to accept a certain sum from him for her maintenance and he has paid as agreed.

On the other hand, if the husband expressly authorizes the wife to contract for dental services, or if he pays such bills from time to time or in other ways acts or talks in such a manner as to show an acquiescence in the incurring of such obligations, he may not be permitted to deny the right of the dentist to recover. And, further, if he fails to provide for his wife, he will usually be liable for necessaries she has purchased, provided they are living together, or even though they are living apart, if the separation was due to his fault and she was free from blame.

It is plain from the foregoing that if the dentist is to render services to a married woman on her husband's credit, he owes it to himself to have some knowledge of their domestic arrangements.

In *Gilman vs. Andrus, 28 Vt. 241,* the plaintiff dentist, it seems, had for some time previous to this action rendered dental services to the defendant's wife. These services had been paid for without objection by the defendant, and later he had a conversation with the plaintiff relative to the making of a plate of mineral teeth for his wife. At this time the defendant said that he would have the work done as soon as he was able.

Thereafter, it seems, the defendant's wife contracted with the plaintiff for the plate. It was made, delivered, and retained by the wife, but the defendant declined to pay for it. The instant action followed, in which the plaintiff sought to recover the amount claimed to be due. In reviewing the evidence, and in passing upon the liability of the husband on the facts disclosed, the court, in part, said:

The plaintiff, from previous dealings which he had had with the defendant, had reason to believe that the wife was authorized to contract for the plate. . . . The plaintiff had been previously, and shortly before the plate was contracted for, employed by the defendant's wife as a dentist, for which services the defendant does not dispute his liability. The defendant also had a previous conversation with the plaintiff in relation to furnishing the plate in which the defendant told him he would have the work done as soon as he was able. Those circumstances, in connection with the fact that he permitted his wife to retain the plate, . . . are sufficient to show her authority to make the purchase and the defendant's liability. . . .

(*To be continued*)

"Let's Go to the Dentist"

By GUY LINTON DIFFENBAUGH, Tallahassee, Florida

I was sitting comfortably on the porch the other day, reading, when my nine-year-old son suddenly interrupted with, "Let's go to the dentist." Immediately his seven-year-old brother echoed, "Yeh, let's." I controlled myself sufficiently to inquire with sympathy whether they had toothache. They chorused an emphatic *no*. "Well, then," I proceeded, "don't you think we'd better wait until the dentist telephones us to come see him again?" They considered this for a moment, and then my younger son suggested hopefully, "Let's take Mickey." Mickey is our wire-haired fox terrier. My older son's explanation saved me an answer. Then the seven-year-old announced resignedly, "Well, I guess I'll brush my teeth, then." "Yeh," acquiesced his brother, and single file two boys and a dog trooped into the house. As I returned to my book, I caught a snatch of their conversation as they made progress down the hall: "Some planes," "Yeh," "I'll say."

I consider that my two sons are healthy, normal young Americans. Their two most positive aversions are washing their ears and going to the barber. Until quite recently they had a third—going to the dentist. Now that aversion has been dissipated and my sons have an enthusiasm for the dentist almost comparable to their enthusiasm for airplanes. In fact, I think they have come pretty definitely to associate dentists with airplanes and airplanes with dentists.

It began this way. About two weeks ago my wife, glancing through her calendar for the month, found that the time had come for our semi-annual pilgrimage to the dentist. She knew of a new dentist in town, she said, who was very good with children. Immediately she called for an appointment. After what sounded like the answers to the usual questions asked by a dentist's office assistant, I heard my wife say: "I beg your pardon. Oh! The older, who is nine, is called Tony; the younger, seven, Jim. Did you ask what they were especially interested in?"

"Airplanes," I shouted from the next room.

"Airplanes," my wife almost shouted into the mouthpiece of the telephone. And the next day we started for the dentist.

We started in good form. However, about two blocks down the street the boys discovered that Mickey had failed to get aboard and was following down the middle of the street in deep concentration upon our car, regardless of all other cars. We waited. During the process of finding a parking place my sons decided that they needed Mickey's moral support in the dentist's office. We discussed this. Finally we arrived in the outer office without the dog, but with two boys in a mood which had a tendency toward the argumentative.

As we waited we discussed rather heatedly and at length, though without any evidence of great forensic skill,

who should go first. In the end we resorted to chronology, and from Tony's expression I gathered that he looked upon himself as a victim and a martyr, even a sacrifice. But when the door of the dentist's inner office opened, that expression almost immediately vanished. For with the doctor's "Hello, Tony," uttered with just the correct tone of equality, my son knew instinctively that here was a good fellow, and he went quickly and confidently to meet him.

The first thing we noticed when we crossed the threshold of that inner office was an airplane. It was impossible not to notice it, for it stood in the most conspicuous place in the room. It was a very wonderful airplane, because it was home-made. You couldn't touch it, however, because it had just been repainted. This was more wonderful still, for here was a plane that had seen service. And so my son, sitting with an unobstructed view of the wonder in wide-eyed and wide-mouthed admiration, had his teeth examined and didn't know it.

The examination completed, our new friend expressed the hope that we could come back the following morning. He had another airplane at home that he wanted to bring down to show us. My son helpfully suggested that we go out to his house at once. But the doctor said he didn't think he could go then because he wanted Jim to see this one, and then some other fellows were coming in later to see it. If, however, we could come back tomorrow morning, he'd be sure to have the other plane here. So Tony went to inform his brother, who appeared from the outer office in great haste, completely agog. And with Jim in the chair we proceeded as before. Then, after many promises to meet on the morrow, we departed, my wife and I in the lead, trailed by two reluctant boys.

My sons were ready the next morning at seven. The business of a two-hour wait was a terrific strain upon them. Finally they decided to wash Mickey—teeth and all!—because the dentist might like to see him, too. That finished, we drove leisurely down town. I bought some gas and made much ado about finding a parking place. We were still too early. Nothing was left, however, but to take up our stand in the corridor. After a period of watchful waiting the doctor was spotted stepping out of the elevator, and under his arm he carried a package. There was no standing upon ceremony this time. We all crowded into the office to see it. And this plane was even better than the other. It was bigger and the paint job showed signs of duty. After the plane had been reverently handled and duly admired, it was placed beside the other, and simultaneously both boys tried to climb into the same chair. In the end each was given a chair from which the planes were equally visible and the business of the day began.

Our friend started with Tony. "There was a fellow in here the other day," he began in a leisurely conversational tone while he quickly and skillfully prepared his implements, "who was an aviator." The doctor allowed that to sink in. "When I asked him to open his mouth, he opened it so wide that I asked him where he learned to do it." With a slight pressure of the dentist's finger on my son's lip the

mouth flew open. I stared in astonishment at the size of my child's mouth. I was recalled from my contemplation by the sound of the drill.

"Where do you think he learned it?" the doctor was inquiring. There was a sidewise wagging of the head in response. "He said he learned it from going to the dentist. Said he'd had lots of practice, for ever since he'd had any teeth he'd gone to the dentist twice each year." The drilling stopped for a moment. "This aviator," continued the dentist, critically considering my son, "was about three times as old as you, but his teeth were just as good as yours." The drilling had begun again. "How often do you think an aviator brushes his teeth in a day? Well, this aviator," went on our friend, generously ignoring his rhetorical question, "said he brushed his every morning and evening. Aviators are pretty busy, but he said all the ones he knew always brushed their teeth twice a day." There was a momentary lull in the conversation while the drill played merrily. Then suddenly the sound ceased and the drilling was apparently over.

Ever slow of speech but quick of action, the dentist was preparing his cement. "If you ever want to make an airplane, I know a good cement." "What?" was the triggerlike reaction. The filling began. "I'll write the name down on a piece of paper before you go. This aviator said," pursued the doctor, "that to eat an orange and an apple at the end of each meal cleaned his teeth almost as well as toothpaste." There was a pause. "He never eats sticky candy either, because it makes your teeth just as sticky as your hands." The filling continued. Presently, "You know how dirty your hands get when they're sticky. Well, this aviator said your teeth get just as dirty." There was a bit of business with a piece of string, and Tony's single cavity was filled. He traded places with his brother, who also possessed a cavity.

With Tony pointing out the fine points of the airplanes to us all, Jim's tooth was ready for the filling before the doctor returned to his loquacious aviator-friend. "You drink much milk, Jim?" At the moment Jim was handicapped for speech, but his brother set the dentist right. "Aviators drink a lot of milk, too," we were informed. I could see that we were nearing the end of our very pleasant visit. But, while the doctor plied the string, he took occasion to remark that aviators travel fast but eat slowly. "They chew their food well," he explained. "And," he concluded, as Jim slipped from the chair, "they eat lots of cabbage and lettuce."

As we parted from our host at the door of his office, he confided that he was getting another airplane in about six months. "When it comes," he said, addressing my sons, "I'll call you fellows up and maybe your dad'll bring you down." And with a "So-long," in just the correct tone of equality, we took our leave.

Driving home, after we had secured the airplane cement prescribed by the doctor, I couldn't help but philosophize a bit. Of the 68,000 dentists in the United States, I mused, some of them were bound to be good and others bad; some successful, others unsuccessful; some sung, others unsung. At this critical point in my thinking I almost

sideswiped a car. But after righting myself I came to the general conclusion that no man who could handle boys as that dentist did could be anything but good and successful, and as far as my sons and I were concerned he would not go unsung.

516 West Jefferson Street

[VALUE OF CULTURE]

But there is another advantage that comes to the professional man who refuses to be utterly absorbed in technic, who cultivates his imaginative life. He is thereby increasing his general capacity, his mental caliber. A capacity for happiness, a habit of serenity are powerful aids to efficient thinking; largeness of view and sanity of judgment will hardly be present in thoughts of the unhappy, irritable, exclusively practical man. Unless our imaginative life is fed and nourished and exercised constantly, our generous impulses will degenerate into sentimentalities; our critical sense of values will degenerate into acceptance and parrotlike repetition of current conventions. Familiar daily acquaintance with literature and history —that more intense, more significant world than this in which we dwell—can alone furnish us with a criterion for the constant re-interpretation of life which is the program of every man who is fully alive. To accept our world and the dominant conventions of our day is to have anticipated the period when we shall cease to live. To meditate on the ideas that informed past civilizations, to unsphere the spirit of Plato and to commune with the most vital human beings who have preceded us in the world is to drink at the most life-giving source, is to regulate our speculations on right and wrong, on beauty, on justice, on human values.

—WALLACE.

American Dental Association Meeting

Memphis, Tennessee, October 19-23, 1931

Memphis, City of Hospitality

The Chicago of the South in transport and industry—a busy bee-hive of a city typical of the strides the new South is making in the nation's history—will welcome the American Dental Association at its meeting in Memphis in October.

Though the Memphis of today, the transportation and industrial center of the South, bears little trace of it to the casual eye, four centuries of history join this twentieth-century city every year in welcoming thousands of convention visitors from all over the nation. Memphis traces its birth to the dawn of American history, a scant forty-nine years after the voyage of Columbus.

Sunset on the Mississippi from behind the Twin Bridges, which carry four railroad and five national highway routes across the great river to the West.

Not only will the convention visitor be charmed with the individual hospitality he will encounter, but he will find an organized hospitality, perhaps reincarnated from that far-famed, possibly mythical something called "southern hospitality" of which he has so often heard and read.

Uptown Memphis, along the river front, presents many points of interest

to one who visits as a convention delegate. At the head of Madison Avenue, where are most of the banks and principal office buildings, stands the $3,000,000 U. S. custom house, overlooking the historic Mississippi River and Mud Island, which city planners have visioned as the city's front-door airport of the future. Next to the custom house is Confederate Park, where the Confederate forces held their position when Federal gunboats attacked the city from the river.

North and south are the offices of the many phases of cotton trade and its allied industries that have had a primary part in making Memphis great as the largest inland cotton market in the world. Among them is the new 12-story home of the Memphis Cotton Exchange.

East from the custom house one block is Main Street, once the business center of the city, which has expanded over block after block of a spacious yet compactly arranged loop district. North a few blocks the visitor will find the Auditorium, completed in 1924 at a cost of $3,000,000, one of the finest auditoriums in the nation, which is to be the convention headquarters for the American Dental Association.

Along Main Street a block to the south is Hotel Claridge with its 400 rooms, one of the newer hostelries, which will house A. D. A. convention guests. Nearby is the Elks Club Hotel, with 200 guest rooms and elaborately fitted lounges and athletic quarters.

South on Main Street the convention visitor will come to Court Square, a bit of green and a bit of wild life in the midst of stern commercial hubbub. Buildings marking the city's progress are all around, the 21-story Columbian Tower on one side, the 19-story Exchange Building on the other, and in the center the squirrels and pigeons of the square make their home, blithely satisfied and indifferent to the rush that goes on around and among them.

Farther south come the city's theatres, a group of playhouses far beyond the usual quota of a city beyond the quarter-million mark in population.

One will find the public buildings of Memphis unusual, too. The courthouse is a classical structure, designed by James Gamble Rogers, a model of municipal architecture with its long Grecian colonnades. Across from it are central police headquarters and the new criminal courts building, beautiful examples of architecture executed in white stone.

The 29-story Sterick Tower, the 18-story First National Bank Building, the new $1,500,000 home of the Bank of Commerce and Trust Company, Hotel Peabody with its 625 rooms and Italian Renaissance lobbies, Georgian dining rooms, studio apartments, all testify to the prosperity of Memphis and make a mute prophecy for her future.

And for recreation—but we will go into that later.

These are just a few hints as to what may be visioned in Memphis—the story of industrial awakening that is being unfolded there in 1931. They may furnish to the visitor to the A. D. A. convention in October enough to make him want to seek for himself the things that most interest him, to the end that he may know better and better tell the world about Memphis.

DIGESTS

CAFFEIN

By George Parker, L.D.S. (Eng.)

The advice is generally given that coffee should be taken by the patient on reaching home after an extraction. However, Greenish (*Material Medica,* 1924) states that tea contains 3% to 4% caffein, while coffee contains only 1% caffein.

Coffee is probably recommended because caffein was first isolated in coffee, and the term *caffein* became associated with coffee. Furthermore, since more tea is consumed than coffee, the system may exhibit a tolerance to tea-caffein, and better results may be obtained from coffee-caffein.

The refreshing influence of a cup of tea or coffee is due probably to the stomachic action of the volatile oils, the amount of caffein and the action of the warm water.—*The Dental Journal of Australia,* May, 1931.

TAINTED BREATH OR HALITOSIS

By Thomas B. Hartzell, M.D., D.M.D.

The author states that bad breath is rarely, if ever, caused by bad teeth, but in most instances comes from the tongue. The papillae are closely packed together and are covered by epithelium. These crevices provide lodging-places for many bacteria.

If the digestive functions are not normal, then the bacterial flora greatly increases and the desquamation of the epithelium is delayed. The bacteria destroy the surface epithelium, and a coating is formed, yellowish-brown in color and having a very offensive odor. As the bacterial ferments break down and destroy the epithelium, gaseous odors are set free.

As a treatment the author advises washing the tongue lightly with cotton rolls or small gauze napkins that have been wet with a suitable disinfectant. This deodorizes the coating and removes the dead material.—*The Journal of the American Dental Association,* June, 1931.

FULL DENTURE PROBLEMS

By M. M. DeVan, D.D.S.

The author believes that the construction of the denture before the removal of the teeth and its immediate insertion after the extractions will overcome many difficulties. However, it is important that only the teeth be removed. Surgical preparation of the mouth is not permissible, and it is unwise even to raise labial or buccal flaps.

(1) Immediate replacement aids in the conservation of the alveolar process, and the sockets are protected against trauma and infection. By conserving

the external alveolar plate a broader ridge is maintained, thus increasing stability.

(2) Any increase in the stability of the denture increases the masticating efficiency. Immediate replacement also keeps the muscles of mastication functioning normally. The maintenance of the structure of the alveolar process is dependent to no small degree on the activity of these muscles.

(3) Immediate replacement solves the problem of esthetics, since the natural teeth may be duplicated or as closely duplicated as is advisable.

(4) By placing the artificial teeth in the same positions as the natural ones the problem of phonetics is largely overcome.

(5) By removing the period of toothlessness the mental reaction of the patient is benefited, since he is not compelled to give up his business and social contacts, and his mind is thus, to a certain extent, diverted from his predicament.

(6) The patient's comfort is greatly increased. There is very little after-swelling, hemorrhage is slight, and suturing is practically unnecessary.

(7) Since the patient is more satisfied with the service rendered, it is much easier to secure payment. At a later date the immediate denture may be rebased and used as a spare.—*The Dental Cosmos,* June, 1931.

Foreign Dental Literature

Edited by JOHN JACOB POSNER, LL.B., D.D.S., New York, N. Y.

SOME OBSERVATIONS REGARDING AFTER-PAIN FOLLOWING EXTRACTIONS

By KONRAD VOLKER,
Spangenberg, Germany

After-pain is feared by both the dentist and the patient. It is the thought of after-pain that in many instances keeps the patient from having the tooth extracted. The promise of removing the tooth painlessly can be honestly made and kept. It must be said, however, that no guarantee can be made that no pain will follow, even if the operation is carried out with great skill and care. Steps should be taken to guard in every manner possible against this most discouraging and often unexpected complication.

One of the first rules in avoiding after-pain is to exercise great care in obtaining and maintaining asepsis. Instruments must be sterilized. Too vigorous use of elevators may fracture the alveolar process, injure the peridental membrane of the adjacent teeth, loosen neighboring teeth or crush bone and soft tissues.

After the simplest operation the socket should be scrutinized for loose bits of bone, fragments of fillings, and sharp ridges of bone. When everything is satisfactory, the soft tissues should be brought back to place. All wounds in which there may be particles of bone should be irrigated with a

3% solution of H_2O_2. Dressings are indicated only in very deep wounds, especially in the mandible. These dressings should be changed every day.

The dentist is frequently blamed for causing after-pain when he has extracted a tooth which is just developing an abscess. The mere removal of the tooth does not instantly stop the acute progress of the apical abscess, and pain may continue for several days despite the extraction. In all instances of swollen areas the needle for local anesthesia should not be used. These are cases for a general anesthetic, and failure to bear this in mind may result in the spreading of infection through the needle, with consequent severe after-pain.—*Zahnärztliche Rundschau,* May 3, 1931.

DENTAL SURGERY

By PROF. DR. F. PROELL,
Greifswand, Germany

In the extraction of teeth two points are to be carefully noted. The soft tissues must not be injured, particularly the epithelium. When a tooth is being extracted and the crown fractures, a flap of the soft tissues is to be made in order to remove the roots properly. The extraction wound is protected against infection when a blood clot forms. This fills the alveolus and is then covered with epithelium.

In making incisions, be sure that they are kept outside the field of surgery. This will prevent injury to the flap and permit the flap to be returned to place and held there with supporting underlying bone. Carelessness of the assistant in holding back the flap may result in crushing and injuring it. Be sure to make a definite, clean-cut incision.

Normal wounds in the mouth are usually closed right up with sutures. In cases of infection where there has been pus or considerable destruction of tissue, a dressing of iodoform gauze dipped in chlorophenol camphor should be used. This is an excellent remedy for dry socket and broken-down, evil-smelling sockets.

Occasionally a patient turns up with an idiosyncrasy for iodoform. The writer quotes a case in which some iodoform was used in a root-canal filling, some of it entering the periapical space, and thereupon the patient developed a severe rash over the body which did not respond to treatment but disappeared upon the removal of the tooth.

Hemorrhage is one of the dangers encountered in the extraction of teeth. In extensive operations it is well to question the patient in order to learn of any prior history of bleeding. Pressure is the commonest and most efficient means of controlling bleeding.

The relationship of the roots of the teeth to the maxillary sinus is very close. Often the floor of the antrum is pushed upward by the bicuspids and molars. Infection in the maxillary sinus is due in 10% of the cases to the teeth. Usually it is due to some infection by way of the nose.

When teeth involve the antrum, it is due either to the extraction of a tooth whose root protrudes into the antrum, the removal with the extraction of a part of the floor of the antrum, or to the forcing of a piece of root up into the antrum. The root

fragment in the antrum may be removed by enlarging the socket through which it entered and then flushing the antrum with warm boric-acid solution. Or the antrum can be filled and the patient asked to hold the nose and blow. This will force out both the fluid and the root, the air passing into the antrum through the maxillary hiatus. If no success follows these efforts, an opening must be made in the canine fossa large enough to permit a good view of the antrum.

Sometimes the root which has apparently entered the antrum has slipped between the bone and the soft tissues. This should be kept in mind to avoid entering the antrum unnecessarily.—*Korrespondenzblatt für Zahnärzte,* April, 1931.

CLINICAL AND BACTERIAL EXAMINATION OF FOCAL INFECTION

By Dr. Harald Baron Osten-Sacken

In the examination of 1,400 people with dental foci of infection, only a small number showed systemic disease. The question of focal infection must therefore tie itself up with that of immunity and herein lies the key to the whole problem. In six cases the restoration to health after surgical intervention, eliminating the dental focus of infection, was remarkable. In four cases patients suffering from an apoplectic condition were cured, while in two other instances marked improvement in their condition was noted.

Dental focal infection can be held responsible for general diseases which are accompanied by fever. There were some cases treated through the conservative attempt to eradicate foci of dental infection, but this proved of no value. Only when these infected areas were cleared up by a thorough surgical procedure was marked recovery evident.

There is as yet no definite means of recognizing focal infection as such, and when the focus is discovered, we cannot say definitely that it is the actual cause of the disease.

The writer does not believe that Rosenow's theory of elective localization is conclusive.—*Vierteljahrsschrift für Zahnheilkunde,* Vol. I, 1931.

PRESSURE ANESTHESIA

By Anton Schlemmer, Vienna, Austria

Bock, in Nuremberg in 1885, was the first to produce pressure anesthesia with a 10%-20% cocain solution in order to relieve sensitive dentin. Since that time it has been used to prevent pain in cavity preparation and pulp extirpation. The reason that it is not more generally used by dentists arises from the fact that local anesthesia is the most popular means employed for the relief of painful operative procedures.

Pressure anesthesia is a modification of surface anesthesia. If a cocain solution is painted upon the surface of the mucous membrane of an open wound, the sensitive nerve endings are disconnected. The skin is not penetrated by the cocain solution.

The working of a surface anesthetic depends upon the length of time the area is exposed to the cocain, the concentration of the anesthetic, the size of the surface exposed and the power of absorption.

After the application of a 2% solution to the conjunctiva of the eye, anesthesia is present in two minutes. In nose and throat operations 10%-20% solutions are used.

The anesthetic action is hastened if the cocain solution is rubbed into the part or pressed in on a piece of cotton. Pressure is needed especially in order to introduce cocain into the pulp when it is still covered by a layer of dentin. This is accomplished through the preparation of an opening into the dentin, the application of cocain, then covering this with gutta-percha and exerting pressure. The cocain then enters the pulp.

Originally unvulcanized rubber was used to force the cocain inward. It was found that the solution leaked out from the sides before enough of it could penetrate the pulp. Gutta-percha is superior in that it confines the cocain better. A paste made of equal parts of cocain and powdered sugar, with one or two drops of glycerin added, makes an excellent pressure-anesthesia medium.

Properly conducted pressure anesthesia will permit the removal of decayed dentin and then of the pulp itself. This spares the patient the long-drawn-out procedure and pain of arsenic devitalization. At the first moment of pressure pain will be felt, but this quickly passes and continued pressure will force the cocain into the pulp and produce the necessary anesthesia. The best cases for pressure anesthesia are those in which the pulp has been exposed after the removal of decalcified layers of dentin. It is a simpler process than making an injection. The objection that pressure may force some of the bacteria from the canal into the periapical area is not borne out by clinical experience.

Pressure anesthesia should not be used in infected teeth or in inflamed pulps. It will be unsuccessful and may do harm. The infected root-end with its bacteria may transmit infection to the periapical tissues and set up an acute condition. In normal teeth there is no danger.

The use of pressure anesthesia following the application of arsenic has been avoided by many operators. This is needless. In fact, Relander first employs arsenic to devitalize the pulp partially and then follows this up with pressure anesthesia.

Teeth with partially dead pulps may be handled through pressure anesthesia. The pulp chamber should be carefully cleared and cleaned with a hypochlorite solution on a piece of cotton. The cavity should then be sterilized with a 10% solution of hydrochloric acid. This aids anesthesia, as most anesthetics lose part of their efficiency in the presence of alkalis.

It is not an easy matter to anesthetize the apical portion of pulp remnants. The best means is to introduce phenol into the canal and carry it to the apex. This is done several times. A paper point is then dipped in phenol and then in cocain, and this is pumped up to the apex, whereupon the apical tissue becomes anesthetized and may be removed.

Pressure anesthesia is indicated particularly in children, as it acts very rapidly and avoids the necessity of local anesthesia.—*Die Zeitschrift für Stomatologie*, April, 1931.

ADENITIS IN THE MENTAL REGION

By Drs. Dechaume and Maleplate, France

Adenitis in the region of the chin may be of tubercular origin. For the most part it arises through dead teeth. It is usually accompanied by an osseous fistula or cellulitis.

The writer gives histories of nineteen cases which have come under his notice during the year. In eleven instances the lesion appeared in the submaxillary area, in three cases in the vestibule of the mouth. All these cases had their origin in the periapical region of an infected tooth or root. In all cases the patient had complained of trouble with the tooth over a long period of time. The radiograph usually shows a rarefied area at the apex. The course of the fistula is quite clear and may be definitely shown by discharging a syringe of fluid through the tract. A small opening may be located on the surface of the mandible where the pus has burrowed through the bone. The majority of all submaxillary adenitis is due to infected teeth.

The course of the condition is a usual one. The pus drills its way through the bone and reaches the soft tissues of the face or neck. Here, depending upon the virulence of the organism or the general health of the individual, it develops into an acute or chronic condition. The cellulitis is of a hard, indurated type, but finally softens, ulcerates the skin and makes an external opening.—*La Revue de Stomatologie, No. 3, 1931.*

PRACTICAL HINTS

THIS DEPARTMENT IS NOW BEING CONDUCTED FROM THE OFFICE OF THE DENTAL DIGEST. TO AVOID UNNECESSARY DELAYS, HINTS, QUESTIONS AND ANSWERS SHOULD BE ADDRESSED TO EDITOR PRACTICAL HINTS, THE DENTAL DIGEST, 220 WEST 42D STREET, NEW YORK, N. Y.

NOTE—Mention of proprietary articles by name in the text pages of THE DENTAL DIGEST is contrary to the policy of the magazine. Contributions containing names of proprietary articles will be altered in accordance with this rule.

Editor, Practical Hints:

Do you know of any prescription I can give my patients which they can use for cleaning their artificial dentures? So many of them complain that the pastes now on the market darken the teeth on the plates.

I should like to be able to prescribe a powder which would keep the dentures clean and at the same time make them feel clean.

A. G.

ANSWER.—We do not see why any of the standard toothpastes should darken porcelain teeth, but there are special pastes put out for dentures.

Prinz gives the following formula:

	Parts by Weight
Calcium carbonate	400
Castile soap-powder	120
Aqua ammonia	240
Glycerin	200
Oil of sassafras—pure	40
Saccharin	1/5

Editor, Practical Hints:

I have had several plates lately which came out of the vulcanizer with the whole model side of the plate covered with very small lumps, presenting a pebbly appearance. I use stone models which appear to be perfectly hard.

I should appreciate any suggestions as to the cause of this.

H. L.

ANSWER. — Provided that you are using the same vulcanizer technic that has proved successful in the past, we would suggest that you vulcanize against tin-foil.

Editor, Practical Hints:

I am having a lot of trouble with open sockets following extractions and should be glad to have you advise me of any way this might be avoided. I use carpules.

The open socket seems to follow cases where there is very little trauma in the removal of the teeth. I am unable to account for this annoyance.

R. E. B.

ANSWER.—We presume that your cases of open sockets would come under the head of delayed healing. Of course the rate of repair of injury varies with

different individuals, and there can be little doubt that the use of a high percentage of epinephrin lowers the resistance of the parts and makes healing more difficult.

We do not know about the carpules that you are using, but some manufacturers make ampoules with varying percentages of epinephrin, and we would advise you to use a solution containing as small an amount as possible, bearing in mind, of course, the length of anesthesia desired.

Editor, Practical Hints:

The following case has been rather perplexing to me:

A boy, seven years of age, has an unerupted right upper central incisor which for nearly a year has failed to make any progress in its eruption. The left upper central started to erupt in July, 1930, and has followed a normal course of eruption to date. The right central for a long time has seemed ready to break through the tissue, and its outline can be plainly distinguished, but it makes no progress whatsoever.

I have checked this case monthly for the past four months, when it was first presented at my office. I have had the patient's mother massage it daily, but with no noticeable results. I have not as yet taken x-rays nor lanced the tissue because I have felt that each month would show results by letting nature take its course.

If you have any information or suggestions relative to this case, I shall greatly appreciate your sending them to me.

J. H. G.

ANSWER.—First of all, it would be advisable to take x-rays, which might show the cause for the delayed eruption. If everything seems normal, then probably it would be best to bring the tooth down into place by means of an orthodontic appliance.

Editor, Practical Hints:

A patient, female, aged 45, was recently referred to me by what appears to be an optometrist, for she was labeled 9% vision.

Radiographs disclose pulp nodules in upper molars on both sides and in one lower left molar and one non-vital bicuspid which shows no apical involvement.

I referred the patient to an optician, who is suspicious of the dead bicuspid, but in whose experience pulp-stones are a cause of reflex pains in the eye only.

A girl, aged 19, presented today with an unerupted mandibular third molar. A radiograph shows pulp nodules in the six-year and twelve-year molars. I realize that the unerupted molar, being slightly impacted, can and possibly does give trouble, but here is the point:

The young lady has very poor eyesight, wearing thick glasses.

Will you kindly throw some light on the relationship of the eyes to pulp nodules?

M. C. C.

ANSWER.—Pulp nodules may cause reflex pain in any branch of the fifth nerve, and it is not necessarily confined to the eye alone. Probably pulp nodules would have nothing to do with

impairment of vision. This would probably come only from infection.

In the first case it might be due to the non-vital bicuspid, though it would be well not to expect any results from extraction. In the second case it is doubtful that the impacted third molar has any connection with the eye trouble.

Editor, Practical Hints:

In mounting radiograms, say, for instance, of lower molars, how do you tell which is the buccal and which the lingual side of the film? Does it make any material difference as to which surface faces you?

B. S. B.

Answer.—A radiogram is a shadow, and by the ordinary method it is practically impossible to tell whether a small filling is on the lingual or the buccal surface of a tooth. Taking x-rays at varying angles will be of assistance, and this principle is made use of in the stereoscopic method of roentgenology.

Editor, Practical Hints:

Which cement in your opinion is more germicidal, one containing 2% cuprous iodid or one with 90% black copper oxid?

R. S.

Answer. — We would say that cement containing 90% black copper oxid would have a more germicidal effect.

Reply to J. C. S.—The following suggestion may help J. C. S., who tells his trouble in March (1931) Practical Hints:

He might try burnishing a strip of tin-foil on the ridge of the model, the width of the ridge and the thickness as used to tin-foil models. Fasten the foil to the model with shellac and soap the foil before bolting the flask.

DENTAL SECRETARIES and ASSISTANTS

Secretaries' Questionnaire

All communications should be addressed to Elsie Grey, care of THE DENTAL DIGEST, 220 West 42d Street, New York, N. Y.

NOTE—HAVE YOU A BETTER WAY? HAVE YOU A TIME-SAVING SHORT-CUT? DO YOU KNOW A "STUNT" THAT LIGHTENS THE WORK OR MAKES FOR GREATER EFFICIENCY IN THE OFFICE? IF SO, WRITE TO ELSIE GREY. YOU MAY HELP MANY GIRLS WHO ARE BEGINNERS—AND YOU KNOW HOW YOU NEEDED HELP DURING YOUR FIRST FEW MONTHS IN A DENTAL OFFICE. PERHAPS YOU NEED HELP NOW. WRITE TO ELSIE GREY—SHE WILL HELP YOU.

Dear Miss Grey:

A few months ago I read your suggestion in the QUESTIONNAIRE for sterilizing burs in phenol. I have since been doing that, but I have run into a little difficulty.

I use a porcelain jar for the phenol, and the burs acquire a black stain when immersed only a few hours. Thinking it was caused by placing the abrasives and finishing stones in the same solution, I kept these separate, but the same thing occurred. What do you think might cause this?

M. Y., N. Y.

ANSWER.—Not knowing the particular content of the phenol that you are using, I suggest that you write to the manufacturers and state your problem. Their chemist should be able to aid you. Perhaps some of our readers have had similar difficulty and can suggest a remedy. We will welcome any ideas on the subject. We do not know of any solution that will not stain the burs if they are left therein for any length of time.

Dear Miss Grey:

Upon receipt of THE DENTAL DIGEST my first act is to turn to the DENTAL SECRETARIES AND ASSISTANTS page to learn new ways to accomplish the old but pleasant task of keeping our office neat and myself up to date. To assist others in the saving of time and labor, may I tell you of an easy method to keep the office presentable?

About two years ago we furnished our office complete with new equipment. It was beautiful. Then came the problem of keeping it so. We tried all kinds of polish, but the results were not to our liking until we used a new kind of polishing liquid* and then our troubles ended. A few drops on a damp cloth, rubbed on and then wiped off, keep the equipment clean and preserve the finish. There is no rubbing, and it is as quickly done as dusting. Hoping this may be of assistance to others, I pass it on.

M. E. J., Calif.

* Name furnished on request.

We appreciate this suggestion and trust it will be of service to our readers.

Dear Miss Grey:

I thought the following might be of interest to your readers, as it was of great interest to me. It gives one an idea as to the circulation of the blood, about which we hear so much.

"If the heart beats 69 times a minute at ordinary blood-pressure, the blood flows through the veins at the rate of 207 yards a minute. This is seven miles an hour, 168 miles a day, 61,320 miles a year. At eighty-four years of age, if a person had had a single blood corpuscle course through his blood all his life, it would have traveled nearly 5,150,000 miles."

I enjoy your column so much. I don't know what we should do without it.

L. S., Mass.

This is an interesting little item, and we thank L. S. for sending it in. We hope to hear from her again.

Dear Miss Grey:

I have been an assistant for several months and have some difficulty mixing plaster so that it will be free from bubbles. The doctor has shown me how to do it, but his models have bubbles very often. Can you suggest a way that I can mix the plaster so that I will surprise him with my results?

The Questionnaire has been wonderful and I have gathered all the old numbers in the office and made a scrapbook.

S. A. J., Ill.

Answer.—First, all plaster impressions should be carefully coated with a thin film of shellac. When this has dried, a thin coating of sandarac should be applied. For impressions of modeling compound use only the thin coat of sandarac, and be careful in coating the impressions of either plaster or compound that you do not allow the shellac or sandarac to collect in any depressions in the impression, especially in the recesses made by the teeth, or you will not have an accurate model. When the coating of sandarac is perfectly dry, immerse the impression in water for a few minutes until you see the air bubbles come to the surface. Then remove from the water, shake to remove any bubbles that may remain in the depressions, and you are ready to pour the cast.

For the proper mixing of plaster do not use the usual rubber plaster bowl. The best thing to use is a porcelain or enamel dish three or four inches deep. Fill this from one-half to two-thirds full of water, then lightly sift the plaster, a little at a time, over the surface of the water so that it gradually falls to the bottom of the dish. When the amount of plaster that you judge sufficient for the size of the cast has been taken up by the water, shake the dish gently so that all the air bubbles will come to the surface. Then pour off all excess water *carefully* and sift just enough plaster over the surface of the mix to take up any excess water that may remain. Do not at any time spatulate the plaster mix.

To pour the cast, hold the impression at an angle that will permit the plaster mix to flow from one recess to another, vibrating the impression gently

to settle the plaster into every depression. If you have followed our suggestions, the plaster will stay soft long enough for you to take sufficient time for a careful and deliberate pouring of the cast. The cast will be hard, free from bubbles, and will have a glossy surface.

We have had a number of letters asking for aid in securing positions. We regret that we cannot use this department for such a purpose, as there is a department devoted to "want" ads in the magazine. We suggest that a well-worded advertisement for a position be placed therein.

We also receive letters in which manufacturers' names are given for certain products or material. These also we cannot publish.

We make this explanation so that those of our readers who send us such letters will know why they have not appeared in these columns. We appreciate all communications sent to us, but we are limited by certain restrictions, as stated above.

Educational and Efficiency Society for Dental Assistants, First District, New York, Inc.

The educational activities of the Educational and Efficiency Society for Dental Assistants, First District, New York, Inc., have been suspended for the summer months, but the members have been participating in a series of get-togethers, the first of which was a boat ride to New Haven, Conn., on Sunday, June 21st. Despite the hot weather, the attendance was good and the day proved to be most enjoyable.

The regular programs of the Society will be continued in October and meetings will be held each second Tuesday of the month, October to May, inclusive. Study groups will also be organized for work in subjects of importance to the dental assistant, such as bacteriology, sterilization, chair assisting, laboratory and x-ray assistance, practical psychology, parliamentary procedure, business management, etc.

The Clinic Club will resume its meetings in September, working out practical demonstrations of the dental assistant's duties and studying methods for greater efficiency in the dental office within the scope of the assistant's work.

Dental assistants employed in ethical dental offices are invited to attend the regular meetings of the Society and become members. A cordial welcome at the meetings is always extended to the members of the dental profession.

The President, Mary A. O'Connor, may be addressed at 428 Palisades Avenue, Cliffside, N. J.

Colorado Dental Assistants Association

The Colorado Dental Assistants Association held its last meeting of the season on June 2, 1931, in the rooms of the Smedley Group in Denver. The Ways and Means Committee reported several money-making schemes, among which was the plan to have a bridge party every month during the summer. The first of these was held on June 17th at the home of Alice Olsen.

A most interesting clinic, the title of which is *Instruments and Their Daily Dozen,* is being planned by the Association to be given at the annual meeting of The American Dental Assistants Association at Memphis in October. Alice Olsen is the delegate.

Regular meetings will start again in September.

BOOKS RECEIVED

A BOOK MAY BE AS GREAT A THING AS A BATTLE—DISRAELI

The Doctor and His Investments, by Merryle Stanley Rukeyser, B. Lit., M.A., Financial Editor, Medical Economics and Dental Survey; Financial and Editorial Writer, New York American and Associated Newspapers; Associate in Journalism, Columbia University; Author, *Financial Advice to a Young Man, The Common Sense of Money and Investments,* and *Investment and Speculation.*

For the man who knows little or nothing concerning investments and the machinery of finance—and probably the majority of dentists fall in this class—this book can be heartily recommended. It may be said to be written in words of one syllable, and perhaps that is why it so appeals to this reviewer. Moreover, it is written with due respect for the peculiar problems of the physician and the dentist. Primarily the aim of the business man is to make money, and the handling of money is the greater part of his business. But, in spite of the vociferous proclamations of pseudo-dental economists, the prime function of the physician or dentist is service.

Consequently, in the handling of surplus income, safety is more important than speed in the building of an estate, since quick results always imply a greater element of risk. Yet, on the other hand, too great a degree of safety may be an unnecessary handicap.

The author of this book analyzes the various forms of investments, pointing out the advantages and disadvantages of each. As might be expected from a man of his long experience, the advice is sound and authoritative. The basis of any estate is the net income, the amount left over and above all expenses. Saving is a habit that can be acquired by the majority. It is the denial of present pleasures so that certain advantages may accrue in the future. But, as the author states, this line of reasoning may be carried too far. The advice to the reader to consult his banker and not to trust to his own judgment or the casual judgment of others is sound.

This book is filled with information that should be in the hands of every professional man whether or not at the present time he has any surplus funds to invest.

326 pp., and index. Philadelphia, Pa.: P. Blakiston's Son & Co., Inc., 1931.—A. M. J.

FUTURE EVENTS

THE MONTREAL DENTAL CLUB will hold its Seventh Annual Fall Clinic in the Windsor Hotel, Montreal, October 15-17, 1931.

Clinicians: R. W. Tench, New York, on *Full Dentures;* E. O. West, Des Moines, Iowa, on *Gold Inlays and Bridgework.* Names of other clinicians will soon be announced.

Ample space has been allotted exhibitors. Information concerning this may be obtained from Dr. K. C. Berwick, 1410 Guy Street, Montreal, Canada.

An invitation is extended to all ethical dentists. For information as to fees, etc., address

ERWIN C. BURBANK, *Chairman of Publicity,*
1008 Medical Arts Bldg., Montreal, Canada.

THE AMERICAN FULL DENTURE SOCIETY will hold its Third Annual Meeting at the Claridge Hotel, Memphis, Tenn., October 16-17, 1931. An interesting program of papers and clinics has been arranged.

The President's banquet will be held Friday evening, October 16th.

H. L. HARRIS, *Secretary-Treasurer,*
607 Medical Arts Bldg., Minneapolis, Minn.

THE AMERICAN SOCIETY OF ORAL SURGEONS AND EXODONTISTS will hold its Thirteenth Annual Meeting at The Elks' Hotel, Memphis, Tenn., October 16-17, 1931.

HOWARD C. MILLER, *Secretary,*
55 East Washington St., Chicago.

THE AMERICAN DENTAL ASSISTANTS ASSOCIATION will hold its Seventh Annual Meeting at Memphis, Tenn., October 19-22, 1931.

RUTH S. ROGERS, *President.*
Suite 803, 223 West Jackson Blvd.
Chicago, Ill.

THE AMERICAN DENTAL HYGIENISTS' ASSOCIATION will hold its Eighth Annual Session in Memphis, Tenn., October 19-23, 1931.

AGNES G. MORRIS, *Secretary,*
886 Main St., Bridgeport, Conn.

THE SOCIETY FOR THE ADVANCEMENT OF GENERAL ANESTHESIA IN DENTISTRY will hold its next meeting at Saltzman's, 60 East 42nd Street, Lincoln Building, New York, on Monday evening, October 26, 1931.

The meeting will open with a dinner at seven o'clock, and the scientific session will commence at eight o'clock.

The essayist of the evening will be Frank W. Rounds, D.D.S., of Boston, Mass., who will present a talk entitled *Practical Suggestions in Anesthesia for the General Dentist.* Dr. Rounds is President of the American Society of Exodontists and Oral Surgeons and has earned a well merited reputation in his specialty.

The officers of the Society who have been elected for 1931-1932 are as follows: James T. Gwathmey, M.D., New York, Honorary President; M. Hillel Feldman, D.D.S., New York, President; Irwin Abel, D.D.S., New York, Vice-President; Leonard Morvay, D.D.S., Newark, N. J., Secretary-Treasurer.

Membership is open to all ethical practitioners subscribing to the code of ethics of the American Dental Association.

GREATER NEW YORK DECEMBER MEETING

The Seventh Greater New York December Meeting will be held at the Hotel Pennsylvania, New York, November 30-December 4, 1931.

This meeting is held under the auspices of the First and Second District Dental Societies of the State of New York. Plans for this meeting provide for timely essays on important subjects and a complete and comprehensive series of clinics, together with an interesting group of topical discussions.

The Chicago Dental Society has accepted an invitation to furnish essayists and clinicians for the meeting, which promises much for those who attend.

Plans are being formulated for a Joint Meeting of the Medical Societies of the Five Boroughs of Greater New York and the First and Second District Dental Societies.

An exhibit by dental manufacturers will continue throughout the meeting.

JOHN T. HANKS, *Chairman,*
CARROLL B. WHITCOMB, *Vice-Chairman.*

THE OHIO STATE DENTAL SOCIETY will hold its Sixty-Sixth Annual Meeting at the Netherland Plaza Hotel, Cincinnati, Ohio, December 1-3, 1931.

The Southern Society of Orthodontists will hold its meeting jointly with the Ohio State meeting.

Men who have accepted invitations to appear on the program include Martin Dewey, Arthur H. Merritt, Charles F. Bodecker, New York; I. Wingate Todd, Edward Reiter, Cleveland; F. Blaine Rhobotham, Chicago; Carl W. Hoffer, Nashville; E. E. Bailey, Denver; Nathan Sinai, Ann Arbor.

A cordial invitation is extended to all members of the American Dental Association.

E. C. MILLS, *Secretary,*
255 East Broad St., Columbus.
E. J. ROCHE, *Publicity Chairman,*
453 Doctors Bldg., Cincinnati.

THE NEW YORK DENTAL ECONOMIC SOCIETY has arranged the following program for the ensuing year:

(1) *The Building of Good Will*—P. Wesley Coombs, Sr., Associate Professor of Marketing, New York University.
(2) *Psychology in Business and Profession*—N. L. Hoopingarner, Associate Professor of Business Psychology, New York University.
(3) *Personality Inventory*—To be made by the Psychological Corporation of New York.
(4) *The Present Status of the Principles and Practice of Good Dentistry*—Alfred W. Walker, Assistant Professor Pulp-Canal Therapy, New York University.
(5) *Law for the Dentist*—M. G. Jenkins, Attorney for the United States Fidelity and Guaranty Company.
(6) *Expression, Impressiveness, Poise*—Walker Matteson, Department of Business English, New York University.
(7) *The Present Status of Medico-Dental Research and Education*—Speaker to be announced.
(8) *The Efficient Administration of Dental Practice*—Speaker to be announced.

The purpose of the New York Dental Economic Society is to promote the best interests of its members. They have as a common ideal the sincere and active interest in self-development and improvement as these factors relate to public welfare.

Membership in the Society is now open to all ethical dentists in New York. Application for membership is subject to the approval of the membership committee and to a two-thirds majority vote of the Society.

JACOB REINER, *President,*
MORRIS TURKEL, *Secretary,*
708 Lexington Avenue, New York, N. Y.
HERMAN ALOFSIN, *Chairman Program Committee.*

THE CHICAGO DENTAL SOCIETY MIDWINTER MEETING

The 1932 Midwinter Meeting of the Chicago Dental Society is to be held at the Stevens Hotel, Chicago, January 18-21, 1932.

The Program Committee already has in the process of development what promises to be one of the finest programs ever presented before any Midwinter Meeting of this Society.

All members of the American Dental Association and members of recognized foreign dental organizations are cordially invited to attend.

CHARLES R. BAKER, *President,*
636 Church St., Evanston, Ill.
HOWARD C. MILLER, *Secretary,*
55 East Washington St., Chicago, Ill.